

# NORWAY CRISIS

NORWEGIAN wet fish trawlers are being temporarily laid up because there is not enough fish for them to catch.

The move, which was announced by the Norwegian Trawler Owners' Association last month, affects about eighty vessels. As they return from trips they are being tied up for a period of two weeks.

This is the first emergency step to alleviate a crisis in fresh fish supplies in Norway which is threatening the livelihoods of 1,100 fishermen and 5,000 processing plant workers.

The cause is a long spell in which catches have gone from bad to worse. Fishermen say that the Arctic waters are 'black', meaning without fish.

The State Fishermen's Bank has already granted postponements of about 20 million kroner due in loan payments and interest.

Trawling firms have applied for additional postponements and unemployment pay for their crews.

● Fish-processing industries in Northern Norway have laid off 1,000 workers, roughly a quarter of the work force, because of a drastic drop in fish supplies, writes FNI correspondent Nick Wade.

Inshore boats and deep water trawlers alike are returning with hardly enough fish to pay for their fuel.

## Fungus may be cause of 'rotting' French boats

A SPECIES of fungus may be the cause of a serious outbreak of timber rot which is hitting inshore fishing vessels in northern France.

It is reported that at least 200 boats are affected between the ports of Boulogne and Dieppe, and that around 40 of them have been declared unrepairable.

The affected timber comes from the Saint Sains forest. Some believe that it may have been badly seasoned; others that a fungus is responsible.

Whatever the cause about 1,500 fishermen are said to have been brought ashore since the trouble was first noticed last year — some of them for good.

## Greeks want to buy in Pakistan

THE Greek Atlantic Cod Fishing Company Ltd. has offered to send one of its factory vessels to Pakistan to buy fresh fish, squid and shrimp from local producers. The consignments would be processed and frozen aboard.

According to official sources, these products can be sold in Greece and Pakistan provided a joint venture is set up and the Pakistan government does the marketing. Prospective investors have been advised to contact the Pakistan Embassy in Athens.

## Jobs threatened as worsening catches keep trawlers in port

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THE *Posidon*, one of Norway's latest and most advanced fishing vessels, has been contracted to a Nigerian concern for an initial period of a year. The owners say that the crisis in Norwegian waters makes it impossible to run her profitably.

# fishing news international

December 1978 Vol 17 No. 12

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MONTH

### Freezing plant

Computer control in Ireland's latest freezing plant — Page 3

### DANES WARNED



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Airfreight company brings fish exporting into the jet age — Page 14.

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An American dream comes true as fishermen rush to the yards for bigger and better boats — Centre pages.

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# TURMOIL IN THE EEC

## Fish row goes to Brussels summit

BRITAIN and her eight partners in the European Economic Community last month looked further apart than ever in their struggle to agree on a fisheries policy. The latest round of talks in Brussels broke down on November 24, and it is now left to EEC leaders at this month's summit meeting to attempt to patch up the widening rift.

But as *Fishing News International* went to press it was not clear if the Prime Ministers preoccupied with the much weightier problem of establishing a European monetary system would find the time to settle the complex and emotive fisheries issue when they sit down on December 4 and 5.

The sudden and dramatic collapse of the fisheries talks shattered the hopes of the EEC Fisheries Council that a settlement to the 2½-year dispute over Britain's demands was at last in sight.

The Germans, in particular, were furious. They will hold the presidency of the EEC Council of Ministers, and they have invested heavily in reaching agreement before their term ends on December 31.

Joseph Ertl, German Agricultural Minister and President of the Council of Ministers, raged: "The British demands violate the Treaties. Hopes of reaching a settlement have fallen to zero."

Because of the "nature and scope" of the UK's demands, he said, no further progress could be made at this level and the matter must be referred to the summit meeting.

## A "travesty"

Other EEC fisheries ministers supported Ertl in denouncing Britain's minister, John Silkin.

Ireland's Brian Lenihan said: "It is high time Mr. Silkin realised that the empire is finished."

The French Minister responsible for fishing, Joel Le Theule, said that the British demands were a "travesty," and the Danish Minister, Svend Jakobsen, declared: "It is impossible to agree on a common policy when the British disregard the Treaties."

Two of Britain's demands which provoked such a heated reaction were:

● The amounts fished by other member states within the UK 12-mile limit between now and December 31, 1982, should not exceed 1977 levels. After that fishing vessels from other member states would be excluded.

● Beyond the UK's 12-mile limit the amounts fixed by other member states should not exceed the 1977 levels. However, the quotas could be adjusted "to take account of variations between total international catches in that year and the TAC's..."

## CHINA CONTRACT

TWO Japanese companies, the Marubeni Corp. and Hoko Fishing Co. have received an order of at least 100 billion Yen to help the Kwangtung Province of China modernise its fishing industry according to a report, in the *Japan Economic Journal*.

The Japanese firms are to provide all the necessary equipment and know-how to catch and process 200,000 to 300,000 tons of fish and other marine life annually on an integrated basis.

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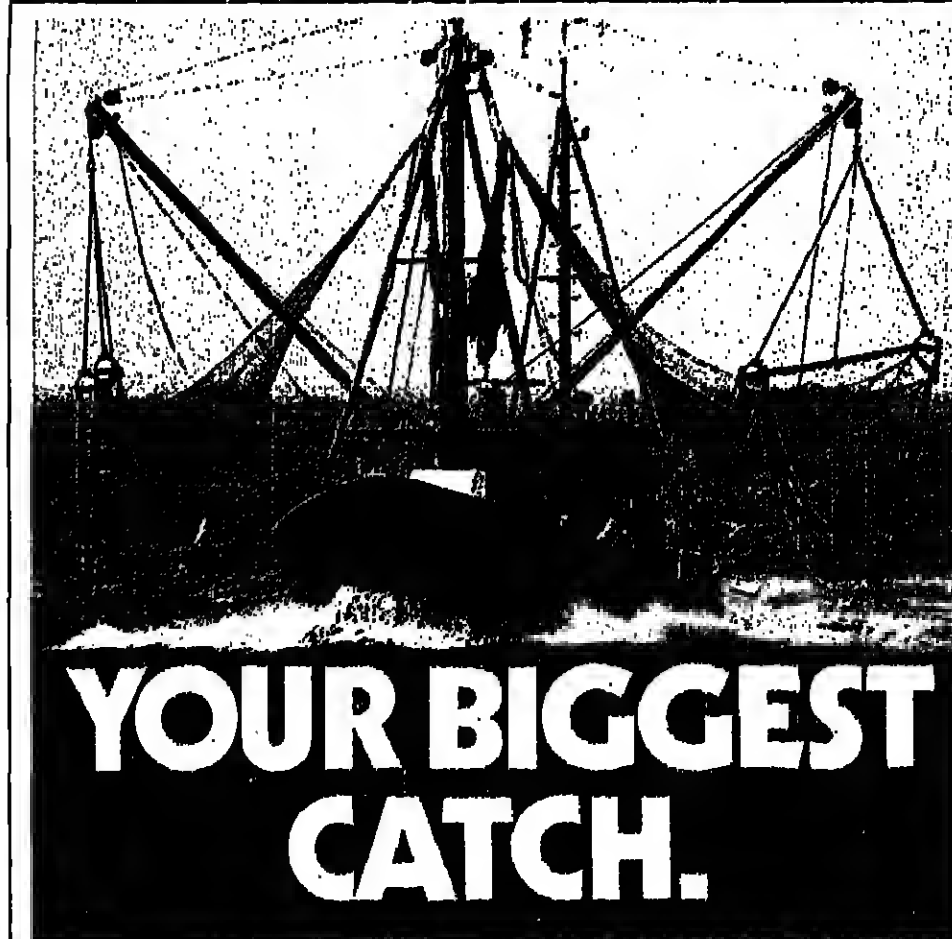
## Arthur J. Heighway

IT IS with deep regret that we announce the death last month of Arthur J. Heighway, founder of *Fishing News International*. He was 90.

During his long career as a journalist and publisher he made many friends in the fishing industry worldwide.

His close contacts with the United Nations Food and Agriculture Organization led to the publishing of more than 100 books on fishing and related subjects.

OUR TRIBUTE — Page 2



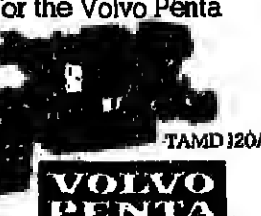
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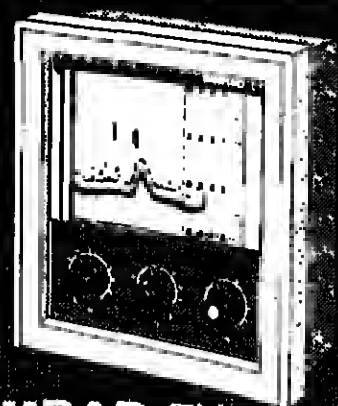
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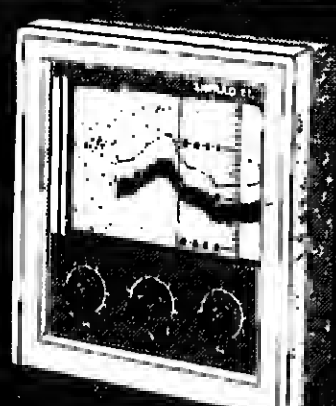




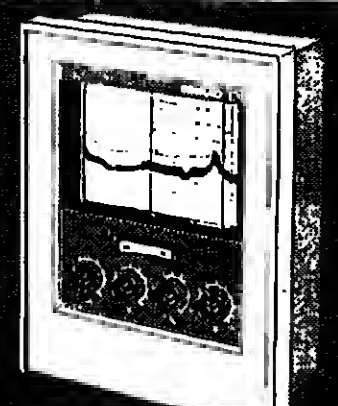
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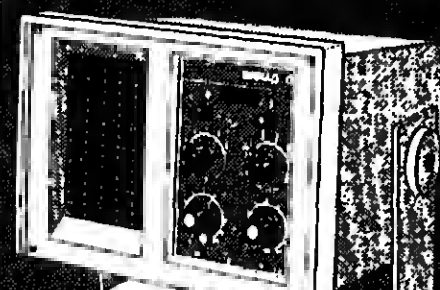
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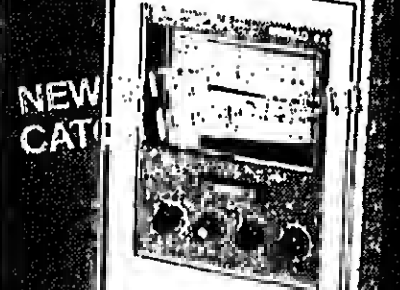
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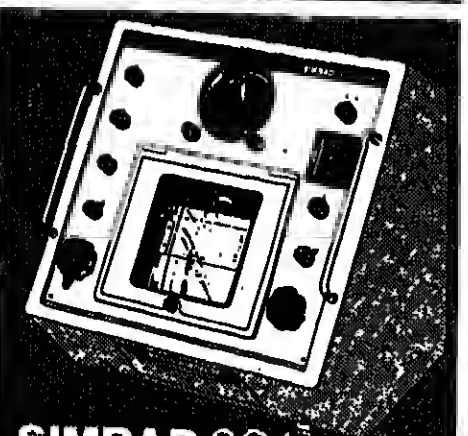
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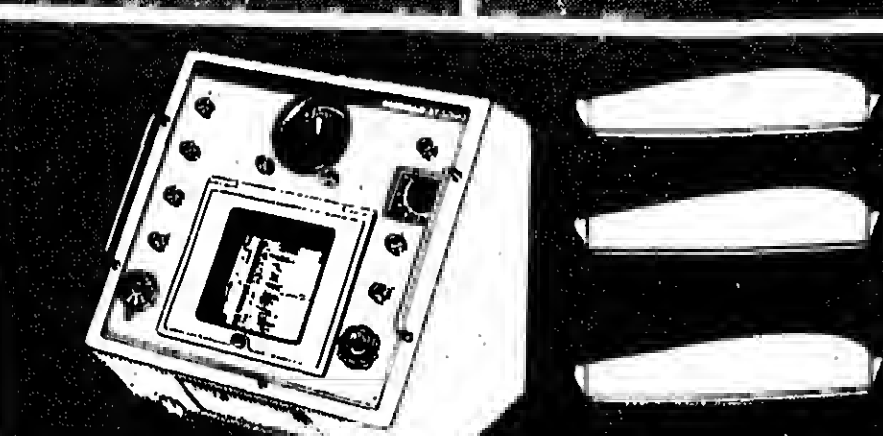
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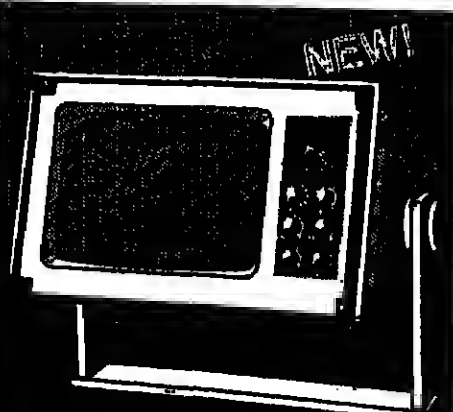


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## comment

### Boston

## shows the boom

IF THERE is gloom over the state of the American economy and the value of the dollar, there was little sign of it during the four days of the US Fish Expo 78 in Boston in October.

The advent of the 200-mile limit has revived many sections of a once-declining fishing industry. And this was apparent at the 12th showing of Fish Expo since the exhibition began at a race track near Boston in 1967.

The show in Seattle (it alternates each year between west and east coasts, and Seattle and Boston) drew a record 265 exhibitors in 1977.

Usually Expo is expected to be bigger and busier on the west coast. But the developments in US fishing are not confined to any one region. There are big things happening in the east coast ports and the industry is growing, despite the restrictions that America's ever-cautious bureaucrats impose on it.

To display the variety of equipment and services now being offered, 313 exhibitors packed out Boston's Hynes Veterans Auditorium and overflowed onto a floor above.

They drew a record number of visitors, and they appear to have taken a record volume of orders for equipment that ranged from seaboots to stern trawlers.

### JOINT VENTURES

Joint ventures by a group of Canadian companies in Nova Scotia, by British and by Norwegian manufacturers did particularly well.

The ten firms taking part in the British venture reported more than 1,600 enquiries and nearly £125,000 in sales. In addition, of course, there could be business worth several hundred thousands more resulting from the exhibition.

The Scottish firm Lossie Hydraulic Company, for example, showed seine net reels and small power blocks. By the end of the exhibition, these all had "sold" notices over them with the name of their American buyer. And Lossie's David Tait was preparing to set off on a visit to New England ports to advise owners on how to fit out their boats.

New England fishermen are very interested in Scottish seining. They have been watching its application further north in Canada and they have been encouraged by trials of the method carried out by Bob Taber and his gear technology team at the University of Rhode Island.

### CUSTOMS DUTY

This interest brought business to another British firm, Bridport Gundry, which was at Expo on the stand of its US subsidiary Brownell & Co. of Moodus, Connecticut.

Brownell was showing seine nets and other gear by Jackson Trawls of Peterhead. Net importers, however, pay heavy customs duty in America and so this equipment may eventually be made by Brownell for its British associates.

Another British net maker, Gourcock, was at Expo and its Canadian company, Gourcock Industries of Nova Scotia, sold six of its nets at the show and was expecting to sell more soon after.

### TRAWL MODEL

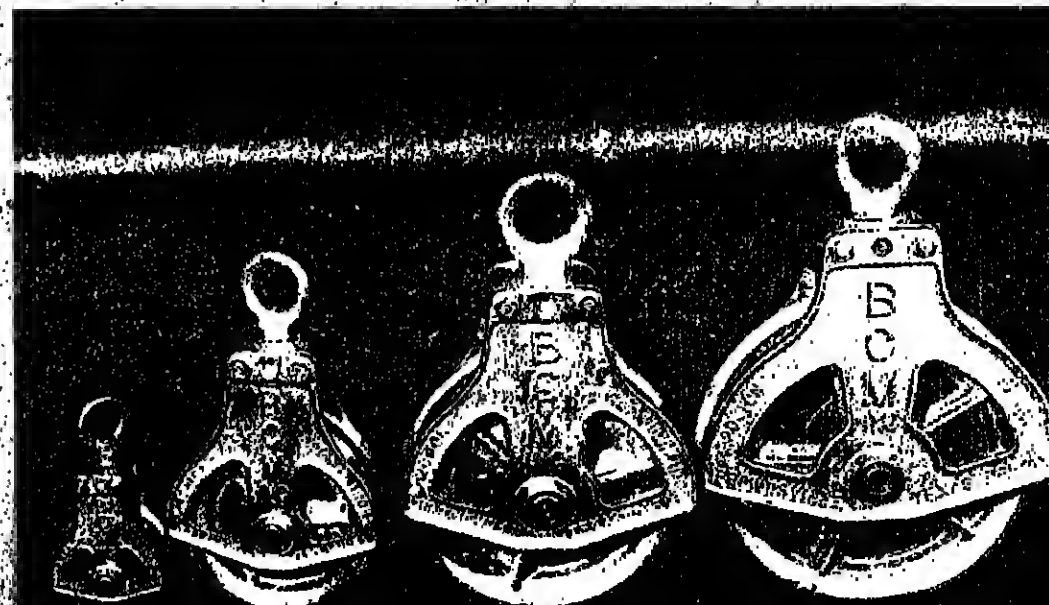
It displayed a model of the Polish rope wing mid-water trawl which is being used off Oregon by Captain Barry Fisher, by Nickerson in eastern Canada and by many other trawlers.

The success of the small group of British exhibitors was matched by that of the Norwegian firms. The Simrad stand, showing the company's variety of electronic fish finders, was particularly busy. One notable sale was the first Situation Display sonar system to go to an American vessel.

Developments in the American fleet have been not so much in the size of vessels or the intensity or range of the fishing, but in the sophistication of equipment and in its quality.

There are still many old, crudely equipped and inadequate boats. But they are moving out of the fleets to be replaced by vessels which, if not always bigger, are closer in quality and in performance to the top boats working the fisheries of Europe.

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## Storm over fish

A DECISION by the Canadian government to close its fisheries product laboratory in Halifax, Nova Scotia, has touched off a storm of protest.

Fisheries Minister Romeo LeBlanc has promised to review the closure scheduled for April 1.

About 35 to 40 laboratory staff are expected to be laid off.

Much of the opposition to the closure has arisen from fears that the government is cutting off badly-needed research at a time when companies need to know more so they can gain new business.

# FIND THE FISH OR LAY UP SHIPS!

SUFFERING from a sharp drop in expected catches in the Barents Sea area, Norwegian trawler owners were last month putting up £20,000 to £30,000 to fund a short-term fish finding expedition. And they were asking for about £50,000 from the Fisheries Directorate.

The situation is critical, said Trawler Association general secretary Arvid Wiik. He warned that all 86 wet fish ships would soon be laid up if alternative catches could not be found.

It was planned to extend the search further north-east and west in the Barents Sea where the Russians have been working for some time.

The serious and prolonged drop in Barents Sea catches in the summer and into the autumn is causing serious concern among Norwegian researchers.

They fear that the slump, which has forced the closure of factories and the laying-up of trawlers, may portend a series of bad years due to depleted stocks.

In their annual August-

## Supply situation critical as Norway owners mount Barents sea search

September assessment of white fish in the Barents Sea, Norwegian research vessels collected evidence of heavy overfishing. According to a Fisheries Department official

barely 240,000 tons of a 1989/90 spawning class remained.

Faced with evidence of depletion, Norwegian researchers recommended that

the 1979 haul of Arctic cod should be slashed by nearly 30 per cent, from 850,000 to 600,000 tons.

The ICES recommendation was a cut to 560,000 tons. But early in November the Norwegian-Soviet Fishery Commission agreed on a higher figure of 640,000 tons. This will be divided equally between the two countries after allocating 90,000 tons for division among third countries.

Up to 80,000 tons of the Russian quota can be caught in the Norwegian zone, while the Norwegians can take up to 30,000 tons in the Soviet zone.

The 90,000-ton quota for other countries is made up of 45,000 tons in the Norwegian zone, 30,000 tons in the Soviet zone and 15,000 tons in the Spitzbergen zone. Third country vessels can be licensed by each of the two nations to take up to 7,500 tons in the grey zone of the Barents Sea.

The total quota for capelin in 1979 has been set at 1.8 million tons for the winter and summer fisheries.

The Norwegian claim for 75 per cent of the total allowable catch was not agreed. Settlement was made at 60 per cent Norway and 40 per cent Russia less than the Norwegians hoped for but more than they feared.

This Norwegian quota is divided into 550,000 tons for the winter and 525,000 tons for the summer fishery. There is a total ban on capelin fishing by both nations between May 1 and August 15.

## Russia to propose deal with Greenland

RUSSIA wants to set up a joint venture for fishing and fish processing in Greenland, Soviet Fisheries Minister Aleksander Isjkov has said that proposals for a comprehensive fisheries co-operation project will be put forward shortly.

It would be on a 50:50 basis and Russia would guarantee the sale of all the products.

### Decline

But Mr. Jonathon Motzfeldt, a leading Greenland politician, is reported as saying that a project on the scale the USSR appears to be contemplating might not be compatible with declining stocks of most fish in Greenland waters.

Greenland's Fisheries Minister has said that he will look at the Soviet proposals. He added that relations with the EEC would have to be borne in mind.

## WEATHER SHIPS TO STAY

CANADA has reversed its decision to phase out two weather ships operating off the Pacific Coast.

Environment Minister Len Marchand said the ships will remain in service at least until 1981 while a satellite monitoring system is established.

## US-Canada dispute goes to the top

UNLESS a settlement is reached by the end of the year in the lengthy fishing boundary disputes between the US and Canada, both governments will intervene.

This was announced last month by Canadian External Affairs Minister Don Jamieson after talks with US Secretary of State Cyrus Vance.

The dispute erupted in 1977 when Canada claimed a 200-mile zone which overlapped that of the US.

Canadian fishermen have been barred from American waters and vice versa after Canada suspended an interim fishing agreement this summer. The agreement was intended as a temporary measure while negotiators tried to find a lasting solution.

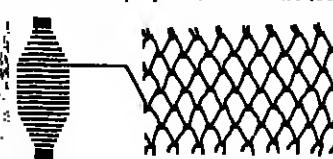
While a settlement appears close for three disputed boundaries on the west coast and in the Arctic, little progress has been made on the coveted Georges Bank in more than a year.

Mr. Jamieson said that as a result of his talks with Mr. Vance he was "quite satisfied that we can make significant progress on a fisheries agreement."

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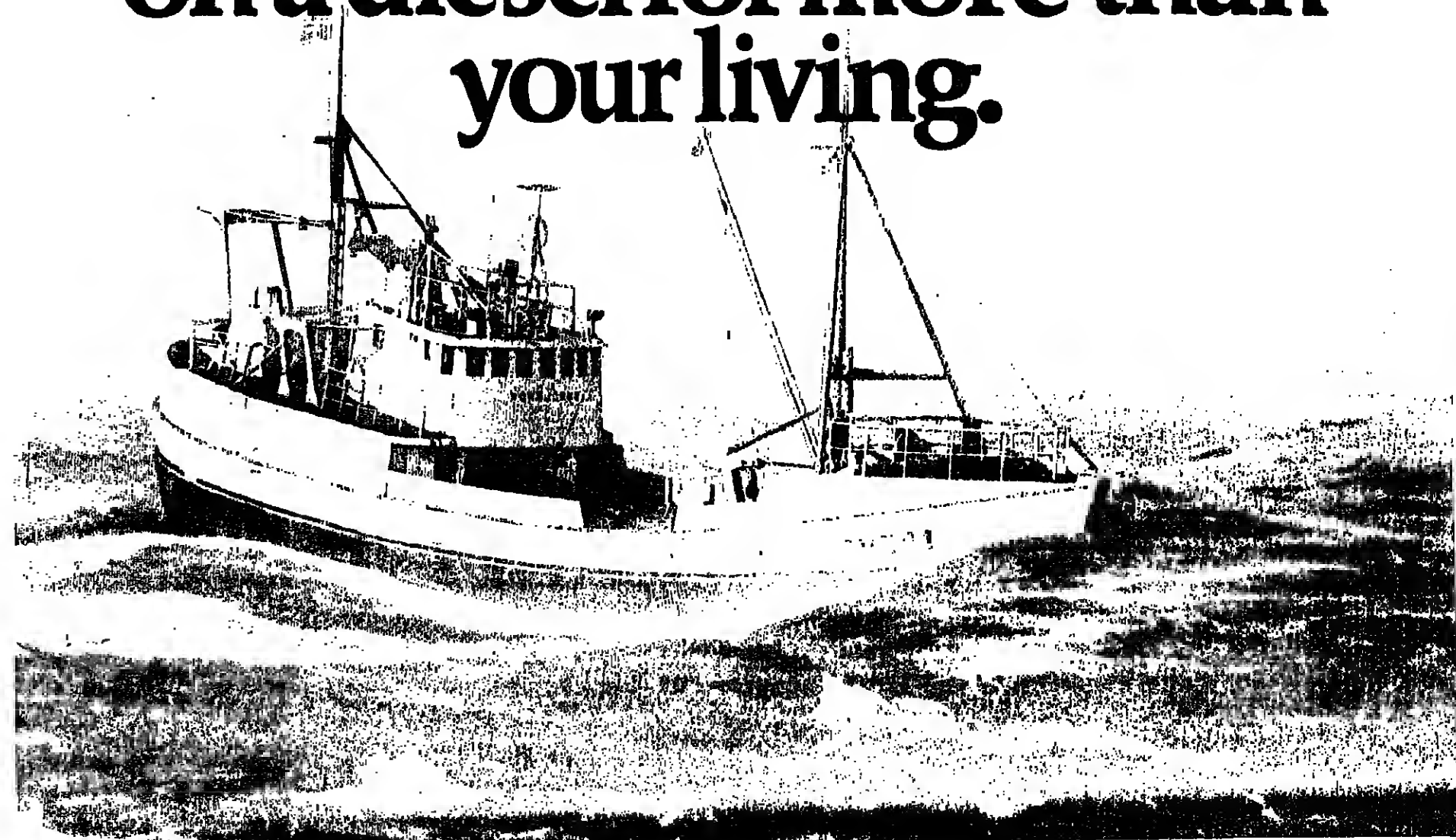
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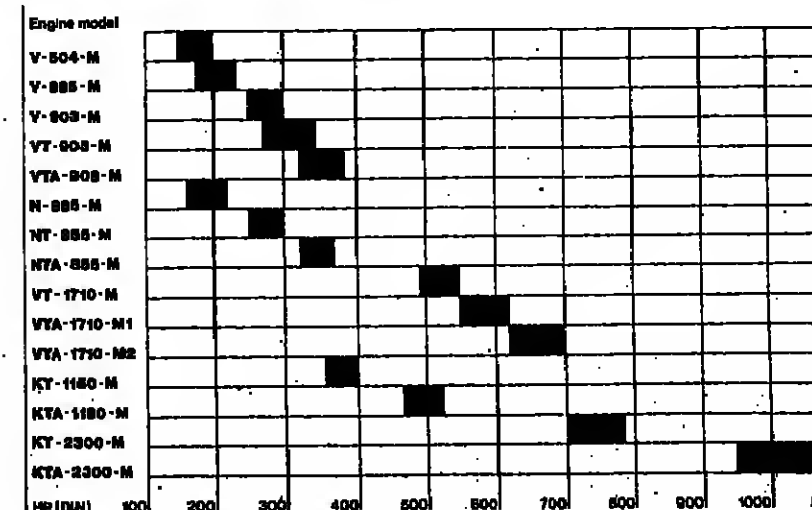
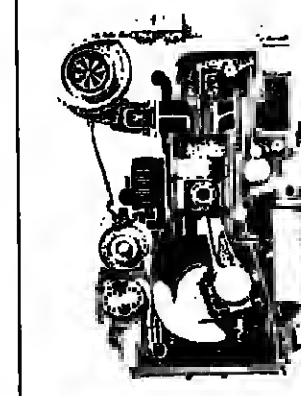
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## Harbour project approved

THE INDIAN central government has given technical clearance to a Rs112.5 million (about £7.5 million) project of the Gujarat government to develop a major fishing harbour at Porbander. This harbour on the Saurashtra coast fronts the Arabian Sea.

The Porbander project envisages construction of an additional jetty and other landing facilities for trawlers and smaller fishing craft. It would also provide ice-making and fish freezing plants, and cold storage.

Gilbert Buchan, president of the Scottish Fishermen's Federation, looks ruefully at the tiny herring pouring into the market at Skagen in Denmark. By British standards fish like this is too small to catch. Mr. Buchan and other leading representatives of the UK fish industry were on a tour of major Danish fishing ports

# Danes told:

### Tour gives UK fishing chiefs cue for some tough talking



DENMARK WAS warned last month that its fleet would have to be drastically cut if disaster was to be avoided in the North Sea.

With the full might of the Danish fleet on display to a visiting team of high-level British fishing representatives, the president of the Scottish Fishermen's Federation, Gilbert

Buchan, said: "I can only be impressed by the way you have organised your industry — but it frightens me to death. Controls are vital with super-catching power like this."

The lavish hospitality provided by the Danes during the tour did nothing to blunt some very straight talking, writes Harry Barrett, Editor of the UK paper *Fishing News*. But there was some hint of movement at industry level towards Britain's position on exclusive limits and industrial fishing for herring.

"If the overall EEC package is right for us we would compromise by backing a 12-mile exclusive limit for Britain," said Laurits Toernæs, chairman of the Danish Sea Fishery Association. "And we would go along with an all-time ban on industrial fishing for herring," he added.

This view was backed by fishermen in other Danish ports although there was no enthusiasm for a compromise among Ministry officials in Copenhagen. What did become clear was that the "right package" for Denmark must include a relaxation of the Norway pout box — that disputed part of the North Sea which has been closed by Britain to protect white fish breeding stocks.

### No harm

Laurits Toernæs called for areas of the box to be opened to herring fishing for Norway pout where there would be no harm to other species and suggested that fishing should be allowed to take place below 70 fathoms.

Gilbert Buchan, however, was in no mood for apology over Britain's action. "Our white fish catches have been getting smaller and Britain is the only country in the EEC to take conservation measures," he told the Danes.

"With the introduction of the Larssen trawl you built up an industrial fishery for herring. You cleaned this up and now you have turned your attention to Norway pout."

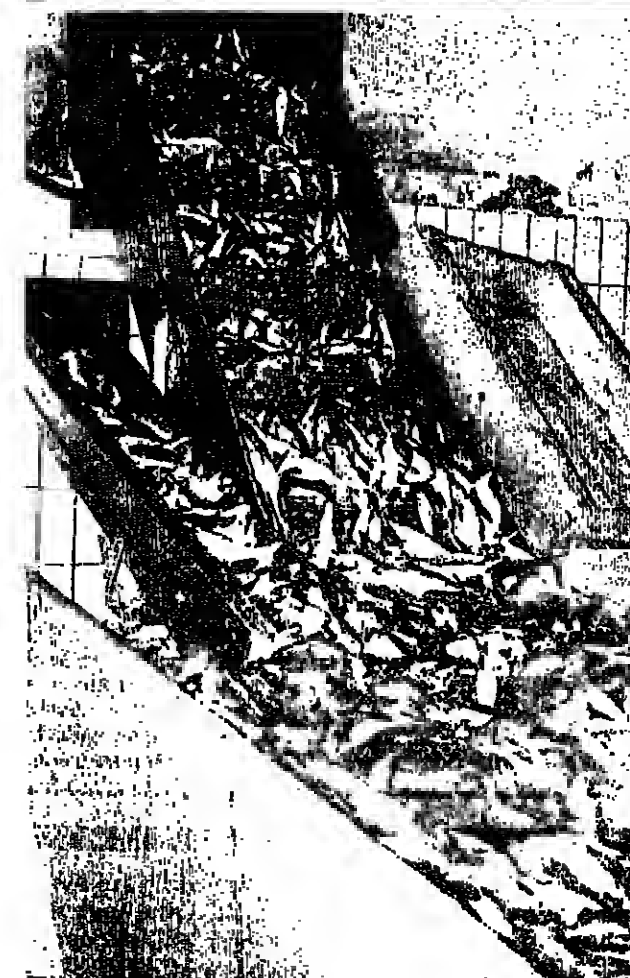
George Crawford, chairman of the National Federation of Fishermen's Organisations, pointing out the value of the pout box, told the Danes that as a result of this measure new broods of haddock and whiting were appearing in the North Sea.

### No deal

He referred to Britain's near total ban on herring fishing and explained the predicament she had been placed in: "To get 3,000 tonnes of herring to keep our fishermen going, we would have had to give the EEC 30,000 tonnes," he said. "We decided to have no herring at all and to save the stock."

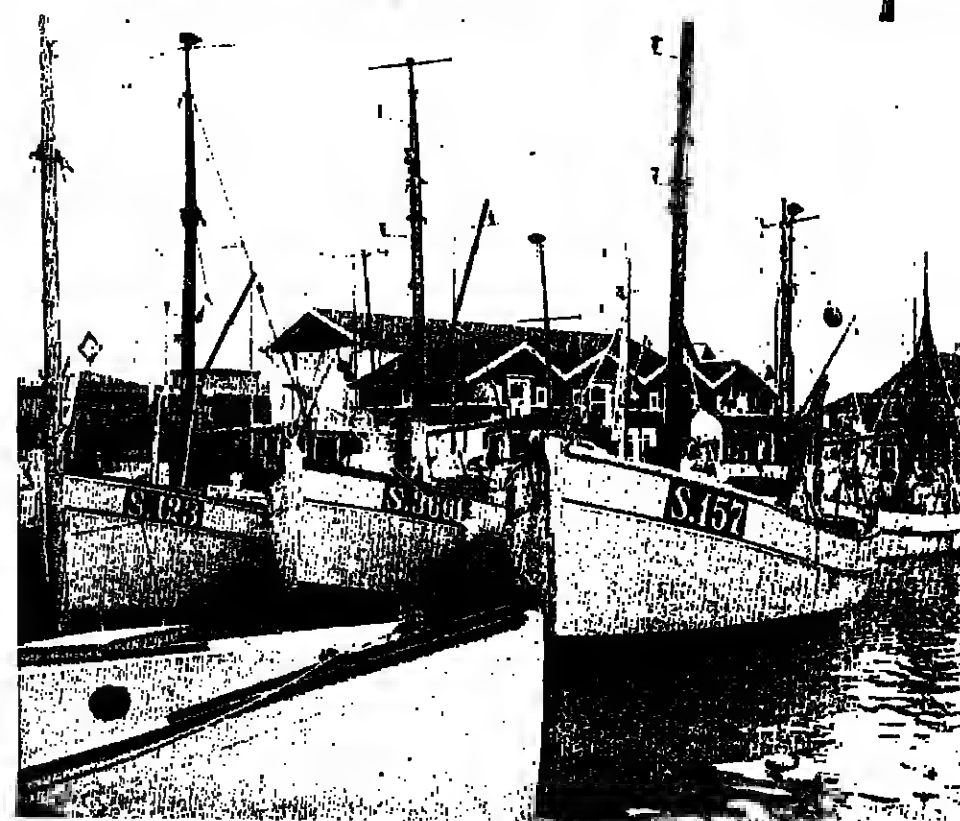
The only hope given to the Danes over herring was a guarded comment by Austin Laing, director-general of the British Fishing Federation:

# cut fleet or face disaster



Left: Herring, probably about 18 months old, are scooped up into the conveyors of a Skagen fish factory. The size of the fish came as a shock to the visiting British delegation.

Right: Inshore boats at Skagen.



## 45 out of Iceland's 106 purse seiners\* carry an ABAS net winch.

### Food for thought?

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## Newfoundland port plan

A MAJOR fishing port is to be established at Harbor Grace in Newfoundland as part of a \$500 million plan for fisheries development in the province.

It will be the base for a fleet of trawlers. Fish landed there will be processed or held in cold-storage for handling later at other plants that now operate only seasonally.

The government expects that its plan will provide a good living for 30,000 fishermen, double the number now working in Newfoundland.

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# TUNA TROUBLE FOR THE USA

PROPOSED fishing zones in the South Pacific region are widely dispersed and in many cases the islands and territories are so small that they do not have the means to police 200-mile economic zones. The main fish of value throughout the region is the migratory tuna, although efforts are being made (with the help of FAO and other agencies), to widen and diversify the resource base.

It is tuna which is at the heart of the problem over membership of the United States in the hoped-for South Pacific Fisheries Agency.

The Americans are the dominant people in the tuna business. They already have a position regarding the exploitation of migratory tuna in their arrangements with the Inter-American Tropical Tuna Commission, although they also come up against problems there.

It is not US policy to recognise coastal state sovereignty over migratory fish in 200-mile zones, although the US will adopt a different stance if it is a member of the controlling fisheries body.

But this flexibility is not, apparently, enough for the independent island countries. Fiji's Prime Minister, Ratu Sir Kamisese Mara, for example, says that a South Pacific forum should be for leaders of



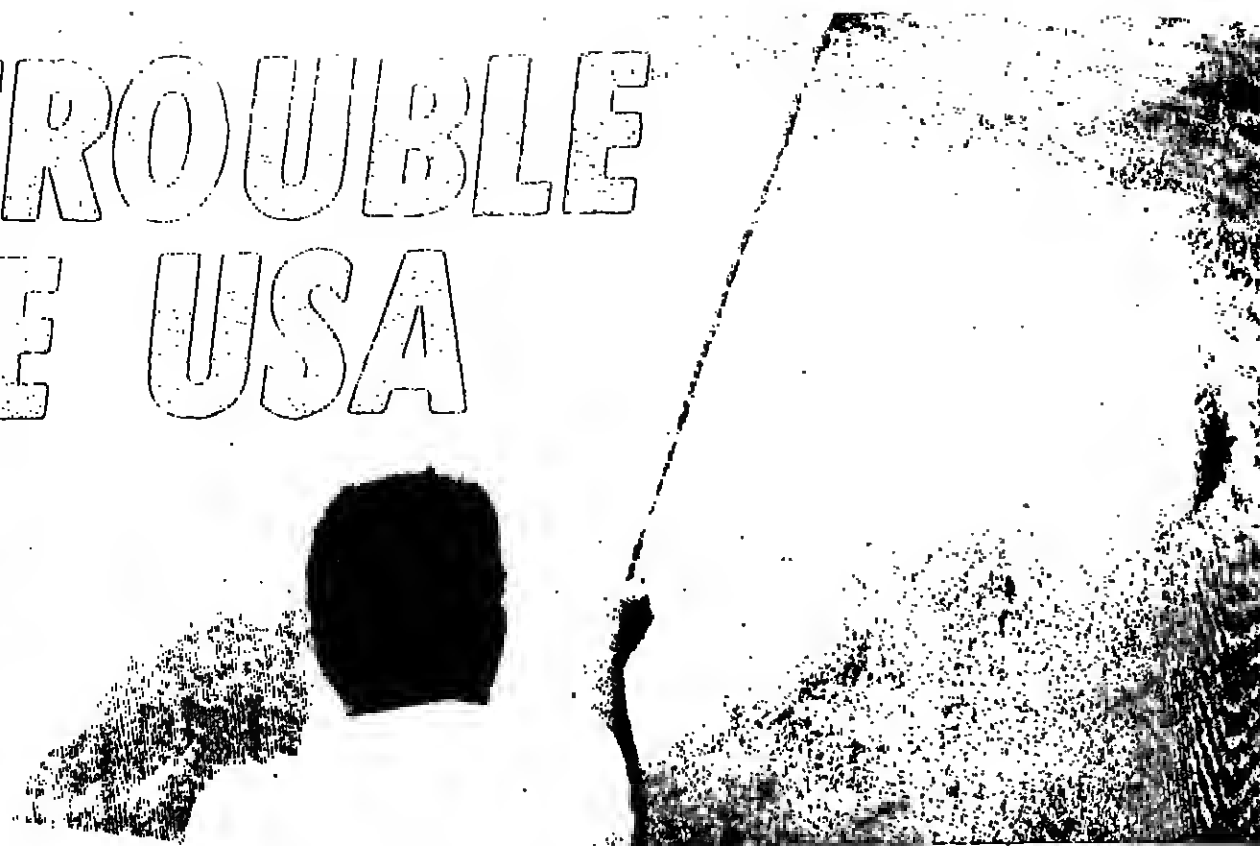
the independent countries able to make decisions on the spot.

He argues that the United States, Britain and France would be represented by non-decision makers.

He has indicated that Fiji might join Papua New Guinea and the Solomon Islands to form a

separate fisheries control organisation. In Port Moresby in October, the Prime Minister of Papua New Guinea said that the United States would only accept another country's right to manage tuna resources within a 200-mile zone on conditions acceptable to

US fishing interests. But coastal states had a right to determine who would fish within their economic zones. New Zealand's Prime Minister R. D. Muldoon, said he had received assurances from the United States at top level that the rules of the proposed South Pacific



POLE FISHING in the South Pacific and another skipjack tuna is swung aboard.

## Dispute blocks new

### Pacific Agency

AS REPORTED briefly in *FNI* in November, the island states and dependencies in the South Pacific are trying to set up a regional body which will draw up and implement a common policy for the vast fishery areas enclosed by 200-mile economic zones. But at the latest discussion towards this aim, there was still a wide division of opinion over the admission of the United States to a regional commission. In this report, *FNI's* South Pacific and New Zealand correspondents explain how division came about and look at the consequences of a continued failure to reach an agreement.

It was evident at the meeting, reports our South Pacific correspondent, that the United States attitude to tuna would prevent signing of a draft convention.

States opposed to US entry, on her own terms, were Fiji, Tonga, Gilbert Islands, Nauru, and New Guinea.

With the US, or non-committed as yet, were Western Samoa, Australia, New Zealand and the former NZ dependencies, Cook Islands and Niue.

This begins to appear like a line-up of the metropolitan powers with some of their former dependencies supporting the United States one side, and the independent island nations on the other. People



engaged in the fisheries feel it is unfortunate that a fishery political issue should have intruded in what is a very necessary development. The common interests of the developing island countries depend on close co-operation, particularly in the rational exploitation of the tuna.

This can best be achieved by a single fisheries agency supported by all the countries. At present there is no international body for managing the highly migratory species in the region, apart from the South Pacific Commission which is presently carrying out a skipjack tagging programme.

Despite the present deadlock, there is still hope that the Forum countries will set up their own mini-agency, at least as an interim measure.

However, those closely involved in the fisheries recognise that participation of the United States and support of other metropolitan countries must continue to be sought if the Agency is to be effective in implementing management policies.

In addition to responsibility for her Trust territories, the United States has big interests

in the region. For example, American companies dominate the tuna fishery based on Pago Pago.

Japan has been showing renewed interest in the Pacific islands and has seen the proposed agency as a threat to her own position in the region.

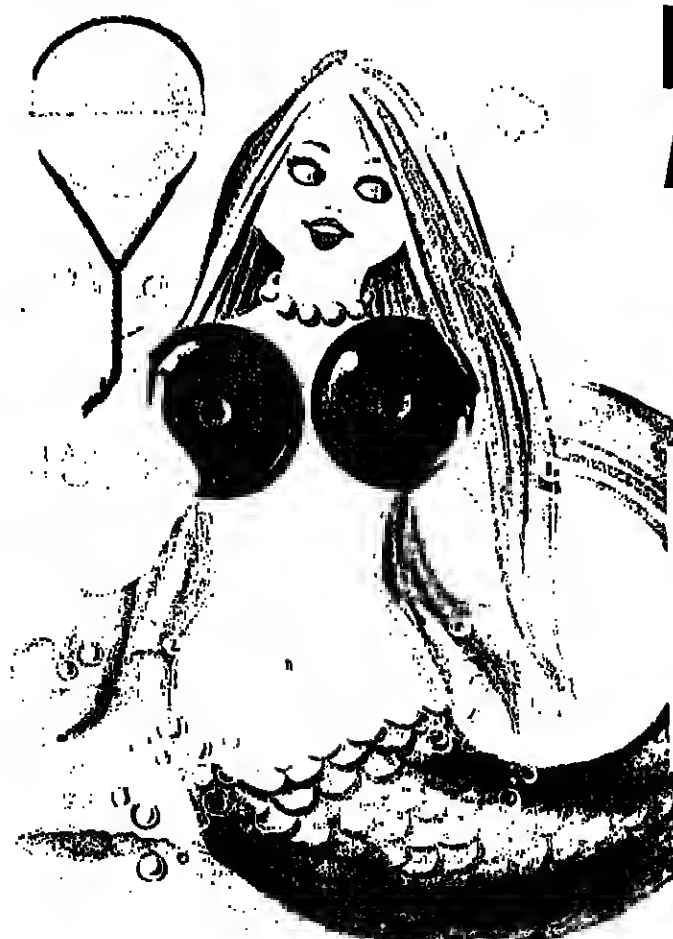
Pressure on island governments for licences and concessions within 200-mile zones is heavy and continuous.

This, again, points to the urgent need for a substantial overall organisation able to negotiate the best possible terms for its members, and to ensure that the newly emerging nations are not exploited.

Failure to set up the agency must lead to a fishing free-for-all, with large-scale poaching, from which the smaller nations will certainly suffer.

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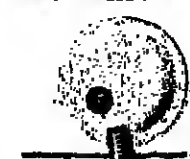
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# Mexico quits Commission

## -and Costa Rica will follow

THE FATE of the Inter-American Tropical Tuna Commission hangs in the balance. Whether it lives or dies could be decided in this month, reports William C. Miller from San Diego.

Such was the consensus of US observers at the annual meeting of the commission in October at Tokyo where no action was taken on a new yellowfin quota nor towards healing a rift among the Latin American countries.

Mexico withdrew from the commission last month and Costa Rica leaves in April. This will not sink the commission that administers the yellowfin conservation programme in the eastern tropical Pacific. There will still be six nations left - the US, Canada, Japan, France, Panama and Nicaragua. But it will put a big hole in it.



"I'm afraid we are coming to a crunch, and we are either going to have to do something or the whole thing will collapse," said Gordon Broadhead, president of San Diego's living Marine Resources.

Commented general manager August Fclando of the American Tunabout Association: "Everything is in a state of flux right now. My best guess is that what happens in December will largely determine the future of the commission."

He added that presumably the IATTC's Latin countries will negotiate among themselves first.



"Then it is anticipated that the USA, Mexico and Costa Rica, at least, will sit down and try to work out a new treaty. It takes a long time to draft, approve, adopt and finally implement a treaty."

The first negotiations would be on a diplomatic level. Moves in this direction by the USA would be directed by John Negroponte, deputy assistant secretary for oceans and fisheries for the State Department, holding ambassador rank.

Mexico told the Tokyo meeting that she intends to abide by commission recommendations but contradicted herself by declaring that she will allow her flag vessels to take 30,000 tons of yellowfin next year.

Costa Rica said she plans to take 22,000 tons of yellowfin. Both projected quotas are vastly greater than the two nations ever caught before.

### Coral search

SRI LANKA'S Minister of Fisheries has instructed the country's Geological Survey Department to investigate where inland coral gathering might be carried out.

This is a sequel to complaints against illegal harvesting of coral from the southern coast.

Dr. James Joseph, director of the IATTC, which has its headquarters in La Jolla on San Diego's North Shore, said that if the principles of a new treaty could be agreed before February, they could form the basis for a new resolution to get the commission through 1979. Then a new organisation could be established in 1980.

Despite a lack of progress at the annual meeting, all eight IATTC countries were represented by one or more commissioners at Tokyo. Observers from Chile, Peru, Venezuela, Spain, Korea and Taiwan also attended.

Mr. Joseph said that while it is highly unlikely that a new treaty can be effected next year, it is possible that a conservation programme can be adopted.

It is proposed that the 1979 quota for yellowfin be set at 165,000 to 210,000 tons for the member nations. It appears that about 185,000 tons of yellowfin will be landed this year in the Commission Yellowfin Regulatory Area.

The rift in the IATTC resulted from a desire by Mexico and Costa Rica to get a larger share of the yellowfin catch allowances.

The US fleet of some 140 purse seiners annually takes well over half of the catch in the CYRA. If the commission breaks up, it will be a case of one of the founders leading in the walkout.

In IATTC meetings earlier this year, Costa Rica proposed a new licence fee for all IATTC tuna ships, based on net tonnage. Mexico urged a fee based on total tuna landings.

Either or both would shift a major share of the cost to the US fleet.

Should a compromise be



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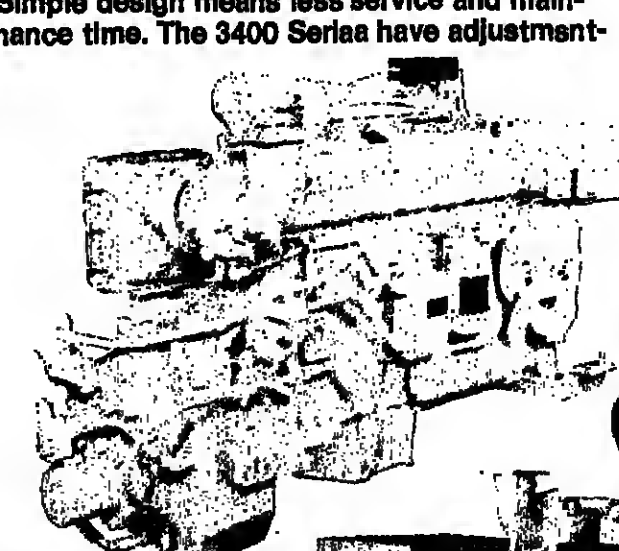
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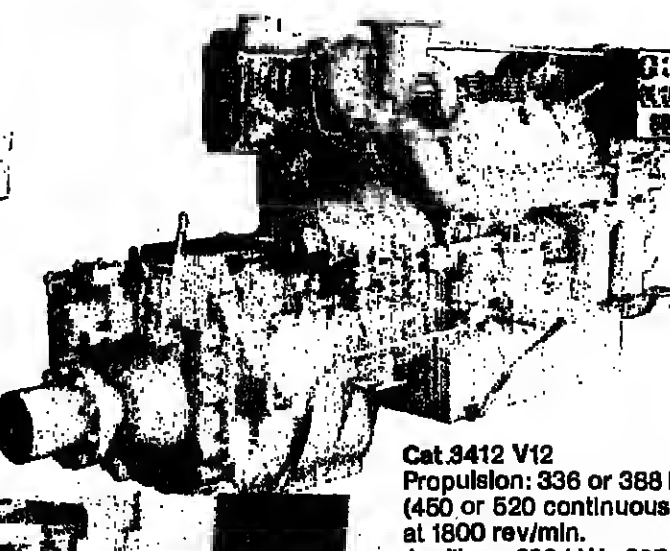
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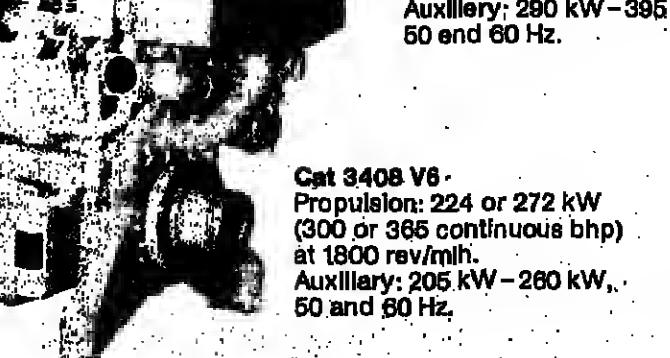
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The fish trade is growing and prices are rising. These are two of the consequences of the world-wide extension of coastal fishing limits to 200-miles. As the big distant water catchers are forced out of the new zones, so more fish and fish products are moving into international trade.

Many products are already too valuable to the seller and too much needed by the buyer to be restricted to the speed of a ship, train or truck. The industry now needs the aeroplane for its top-priced products.

The Flying Tiger Line, the world's largest air freight carrier, was at Fish Expo 78 in Boston in October to show how it can help.



Bluefin tuna caught off the US Atlantic coast are packed in temperature controlled containers for transport to Japan.

# FLYING FISH!

## US jet link to growing markets

A POPULAR sushi shop in Tokyo sells bite-size pieces of quality tuna for the equivalent of 33 US cents while other local shops charge up to \$1.60. Frozen king crabs in Nemuro, Japan, fetch \$2.60; in Sapporo, only 200 miles away, the same crabs sell for \$13.

These dramatic price ranges reflect the turmoil in a fishing industry still trying to adjust to the impact of United States, Russian and other 200-mile limits.

Seafood prices in Japan have been soaring recently, with overall increases of more than 30 per cent, as wider limits force many Japanese vessels out of traditional coastal waters off the USA and USSR.

On the northern island of Hokkaido, for example, some 2,500 people have been thrown out of work and 1,400 vessels made idle by cuts in catches following the Soviet claim to a 200-mile EEZ.

But coastal fisheries, such as those of Alaska, have an abundance awaiting the local catchers, and the processors and traders enterprising enough to make use of the new opportunities.

Helping them find outlets is the Flying Tiger Line which, in mid-October inaugurated a scheduled airfreight service between Anchorage and Asia. The giant airfreighting service transports cargo between Anchorage and Tokyo, Osaka, Seoul, Taipei, Hong Kong, Manila and Okinawa.

Removing the salmon roe before it is shipped to Japan



Thanks to deregulation at the beginning of 1978 of air cargo transport between the 50 states of the USA, Flying Tiger has vastly expanded its range of operation. Moving cargo all round the United States and to the Far East, it must now be looking hard at other areas where it might start flying perishable and increasingly valuable fish products.

Flying Tiger has lifted more

than nine million lb of seafoods from the United States to Asia in 1978 — an increase of some 50 per cent over the last year.

"The export rate could mushroom if seafood shippers would take advantage of airfreight to introduce and market new types of fish throughout Asia," said Lelan Lal, Flying Tiger International marketing manager, at Boston Fish Expo.

Airfreight shipments include live or fresh fish such as tuna, salmon, salmon roe, eels, sea urchin roe, herring roe, lobsters and crabs.

"Species such as clams, scallops, squid, mussels and certain types of lobsters and crabs have also been successfully transported in small sample shipments," he added.

"We are continuing our research to design new services for these underdeveloped varieties of seafood which could open up new markets."

Airline technicians have developed an insulated container which maintains fresh tuna at a stable 35-38 deg.F. with the help of specially-designed dry ice packs.

These packs each hold 150 lb of refrigerant and are quickly removed when the fish arrives in Tokyo, freeing the container to carry non-perishable products on return flights.

Each "igloo" takes a minimum of eight tuna, each weighing 600 to 800 lb.

Also developed by the airline are insulated cartons to airfreight lobsters and crabs and "Contanker" watertight containers for transporting live fish.

Among the latest additions to Flying Tiger's fish freight list is salmon roe from Alaska to Japan.

This year, in the June to September season, Flying Tiger transported more than 1.7 million lb of roe from Anchorage to Tokyo. And the highest grade product sold at the Tokyo Central Wholesale Market for \$10 and more a lb.

"Airfreight has become more and more of a dominant factor in the fishing industry in Alaska," said Douglas Shaw, Flying Tiger's general manager in Anchorage.

One major distributor relying on regularly scheduled domestic and international airfreight service is Seattle-based Swifsure Fisheries.

"This is a time-sensitive business," said Swifsure president Neil Todd.

"During the June through September salmon season, we can move the fish to local markets quickly and in prime condition. For example, salmon caught in Alaska on Wednesday can be on dinner tables in Seattle by Friday."

During the season, local air carriers bring fresh salmon and roe daily from fishing areas and processing centres to the Flying Tiger Anchorage terminal.

"Air transportation keeps our operations moving," explained Steven Ross, traffic expediter for Swifsure.

"We use bush planes to serve as our pick-up and delivery service. During the peak of the season, these single-engine planes carry fish hourly from outlying villages to central transportation hubs.

The fragile egg clusters are hand-packed in salt and placed in 22lb wooden boxes.

When these arrive at Anchorage terminal, they are loaded onto sturdy cardboard pallets measuring 29 by 33 inches. Nine of these disposable pallets fit on a standard 88 by 125 inch airfreight pallet.

Plastic and absorbent cotton material is placed round the eggs to prevent leakage.

"Flying Tiger has assembled professional marketing and sales personnel locally who are tuned to the needs of Alaska's fishing community," said Mr. Shaw.

"We constantly strive to assist companies like Swifsure by expanding markets for new varieties of seafood. For example, clams, scallops and crab continue to grow as an export possibility."

"These products, and several other species of seafood, might be economically feasible for air shipment sometime before 1980."

# FISH!

An aquatic life support 'Contanker' for eels and other sea creatures is moved to a Flying Tiger Boeing 747 freighter. The airline operates six of these big aircraft and each can take more than 200,000 lb of cargo. Two new 747-200s will be added to the fleet next year. It also operates 18 stretched DC8 freighters and is adding two more in 1979.



## from the dockside

from page nine

advantage of another way of co-operating with foreign fleets — direct selling to factory ships.

When I was at the US Fish Expo in Boston last month, I was one of those fortunate enough to be at the seminars when Seattle naval architect Benjamin Jensen showed a set of slides of the joint luke venture between the Russians and the Americans off the north-west coast.

This is a fascinating east-west joint venture. It involves Sovryvlov in the USSR, Bellingham Cold Storage in the USA, and a small group of Oregon skippers, including Captain Barry Fisher and his new boat the 26 metre *Lady of Good Voyage* which we described last month.

### Two ships

From the slides and the account of the operation, it seems that two Russian ships are presently involved, one an early type factory stern trawler and the other a more modern fillet ship.

The catcher boats have been getting some huge hauls of hake, which is abundant in the area. This is transferred in containers and handed up the stern ramps of the Russian

trawlers. Payment is by weight of fillet and this, said Jensen, is working out well.

In the catcher to factory operations off the south-west of England, there is hardly any contact between British and Russian crews. The bins come down, the fish is taken up and payments are by the agents.

### Together

Off the US coast, judging from the pictures, contact is much closer and more friendly. Jensen was able to show the whole sequence of catch to frozen fillets and, from this, I got the impression that the Russians and the Americans have worked closely together to get a satisfactory system going.

It does seem a practical, commonsense way of easing a coastal fleet into larger-scale fishing, giving crews experience in intensive factory-supply catching and bringing in the earnings essential if the quality and capacity of boats are to match the new opportunities within the 200-mile zone.

Peter Hjøl



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WHILE an FAO study shows that fish is more important in many diets than is usually thought, an FAO project has been proposed to direct a greater share of the world's catch to direct human consumption.

Reports by  
**CEDRIC DAY**

Pictures by FAO

Top of the pile but still not enough. Like millions of other children in developing countries, this boy looks to fish to provide a large proportion of the animal protein in his diet.



# ALL THE NEEDS

A NEW LOOK at fish as high nutritional food — that is, as a contributor of animal protein to the human diet — shows that it plays a far more significant role than is usually accorded it by people who present it in terms of quantity, not quality.

By so doing they downgrade its importance, asserting that it contributes only about two per cent to human food supplies.

As one economist remarked to me recently: "It wouldn't matter much if all the fish resources in the oceans and seas were wiped out."

Tables on the consumption of fish as a contributor of animal protein, recently worked out by Wolfgang Krone, Chief of the Fish Utilization and Marketing Service in FAO's Department of Fisheries, show how mistaken is this view.

In his first table dealing with the "importance of fish as food," his figures indicate that fish contribute some 40 per cent of the animal protein in the diet of about 15 per cent of the population in developed countries, 21 per cent of the people in developing countries and five per cent in central planned economy countries.

At the other end of the scale, over 70 per cent of the population in developed countries derive less than ten per cent of the animal protein content of their diet from fish, the figures for the other two

## It's a in the

groups being 26 and five per cent respectively.

Other significant figures in the table show that 47 per cent of the population in developing countries derive ten to 19 per cent of their animal protein from fish, while 55 per cent of people in the countries with centrally planned economies derive 30 to 39 per cent.

### Calculated

As Dr. Krone points out, the figures in this table have been calculated on the total supply of proteins per head per day. The fish contribution is in relation to the supply from meat of various kinds, including that of poultry, and of eggs and milk.

However, Dr. Krone has prepared a second table which, perhaps, reflects more fairly the role of fish as a supplier of animal protein in the human diet. In this table (which we reproduce), eggs and milk have been eliminated as being a "non-competitive" bulk terms the contribution of

# WORLD FISH...

## vital food human diet

source of protein supply, and the competition limited to meat of various kinds. As a result, the importance of fish as a source of animal protein stands out even more clearly as the table shows.

This view of the contribution of fish to the human diet gives a much fairer picture of its significance than do the world averages of food supply which are usually quoted.

Such world averages "don't mean anything," said Dr. Krone, as they deal in quantity and do not take any account of quality. While in fish to human food supplies is

small, in the important matter of supply of protein the contribution is of the greatest importance to hundreds of millions of people.

In total, more than a third of the world's population derive some 40 per cent of their animal protein from fish. In developing countries alone, fish provides about 60 per cent of the animal protein the people consume.

Relative to this whole question is the view expressed by Professor Nevin S. Scrimshaw, Ph.D., M.D., Institute Professor and Head of the Department of

Contribution to total animal protein intake	Developed countries (% of population)	Developing countries (% of population)	Centrally planned economies (% of population)
More than 40%	16	57	5
30 to 39%	6	2	86
20 to 29%	1	9	3
10 to 19%	38	22	3
Less than 10%	39	10	3

## Plan to boost the supply

FAO has proposed a world-wide research project to "increase the utilisation of fish for human consumption" as a help towards meeting an expected increased demand for food fish of 100 million tons by the end of the century.

The FAO view is that the increased demand can be met from conventional and unconventional resources (such as oceanic cephalopods and mesopelagic fish) but that "this will not be an automatic process."

For example, while the production of food fish has increased in developing countries in recent years, their share in food fish consumption has decreased. This is largely due to the higher purchasing power of developed countries and those with centrally planned economies, but the most urgent social and human need is increased fish consumption by people in the developing countries.

On the other hand, the technically advanced countries have not had to exploit fishery resources for feeding their populations. They have converted much of their catch into animal feed, especially where this fish can be harvested at low cost. To reverse this trend and

direct the catch of developing countries more to direct use as food will, FAO contends, call for "a determined research effort" leading to provision of fishery products "within the reach of low-income sections in developing countries."

The fact that the largest stocks of available conventional fish — small pelagic species — are close to many of the developing countries is a favourable situation.

So far, such stocks have not been exploited or have largely been used to provide raw material for animal feed.

### Requirement

It is estimated that some 40 million tons of small pelagic fish, including the catch at present being converted to fish meal, could be utilised for human consumption but this would call for the expansion of the fisheries, says FAO, and the introduction of new industrial techniques.

A primary requirement is "to ensure that low cost is achieved, by high volume throughput" and "to identify and develop the means of marketing the products." The developing world has not the means for doing these things alone and will have to be assisted by developed countries. A start towards this objective



Instead of being dried in the open air, this fish caught in Mali in West Africa is smoked in ovens provided by a UN/FAO World Food Programme project.

live has already been made. The Danish government is giving assistance through a project to improve the handling of small pelagic fish. The Norwegian government is also scheduled to provide funds next year for a project to improve production methods at village level.

FAO proposes to act as a co-ordinating body in such work as this and to promote research into industrial technology for making the fullest use of small pelagic fish resources, involving institutions in both the technically advanced and developing countries. It is estimated that the cost of implementing the results of such research "will run into tens of millions of dollars."

Briefly the FAO proposed project would seek to:

- Promote research through regional co-operative programmes in fish technology, link in such work Asian and African institutes to those in the technically advanced world;
- Enlist the support of industry in the work;
- Co-ordinate other internationally supported projects in this field;
- Promote the design and construction of new equipment for handling and processing small pelagic fish and promote the utilization of such fish.

While funds for projects are expected to come from various sources, such as those provided by the Danish and Norwegian governments, funds for FAO's key project will, if approved, be provided mainly through UNDP.



The dinner goes home. A satisfied buyer takes her purchase away from Mopti market.

Nutrition and Food Science of the Massachusetts Institute of Technology, Cambridge, USA, in the WO Alwater Memorial Lecture he delivered last year.

### Contended

In it he contended that the real protein and calorie needs of the poor masses of people in the developing countries have been seriously underestimated.

The total availability of protein and calorie, averaged out, gives a misleading view of the situation since income largely determines the amount and quality of food consumed.

He said comparison of average consumption "gives an unreliable estimation of the prevalence of caloric deficiency in a population and an even more misleading impression as to the prevalence of protein deficiency."

Such average figures "tell little about the proportions of the population deficient in these dietary components." Such a situation indicates the immense importance of fish in the diet of the poorer mass of people in the world.

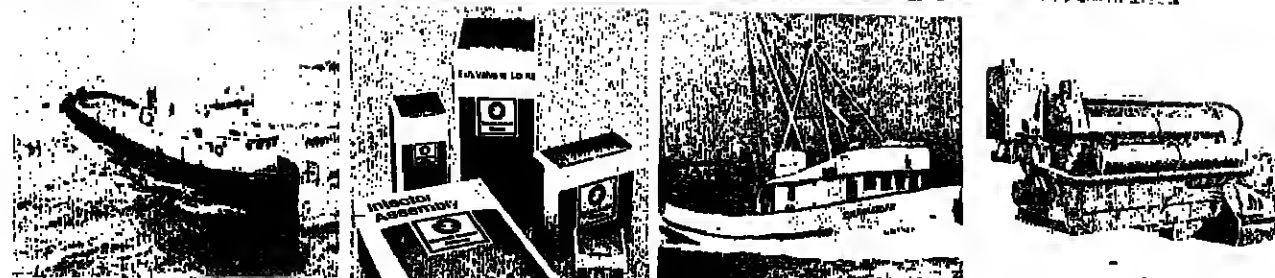
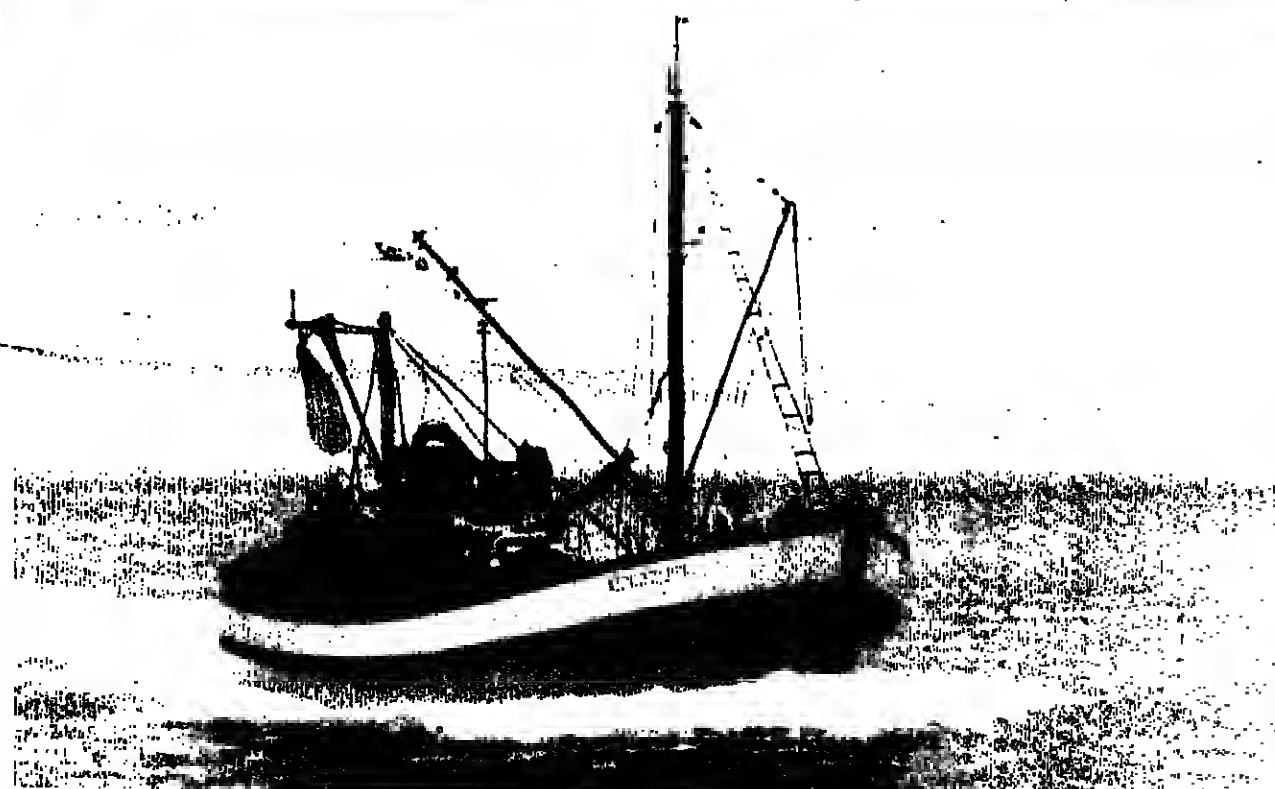
These are aspects of fish as food which should be more

widely recognised in planning for increased food supplies for the world's growing population. It should also be remembered that the figures quoted here do not take into account the indirect contribution of fish to human food supplies through the use of fish meal as animal feed, and

the various uses of meal and of fish waste as fertiliser.

As a final word to the discussion, Dr. Krone said that while the nourishment value of fish is of the greatest importance, he would always stress the fact that "fish is primarily wanted and eaten as tasty food."

ABOVE: The family meal. A Bozo woman of the fishing village of Face Nimitongo prepares a fish meal outside her hut. The village is on the Niger River, 13 km from Mopti in Mali.



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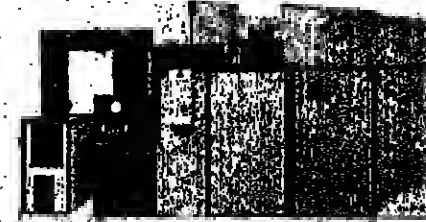
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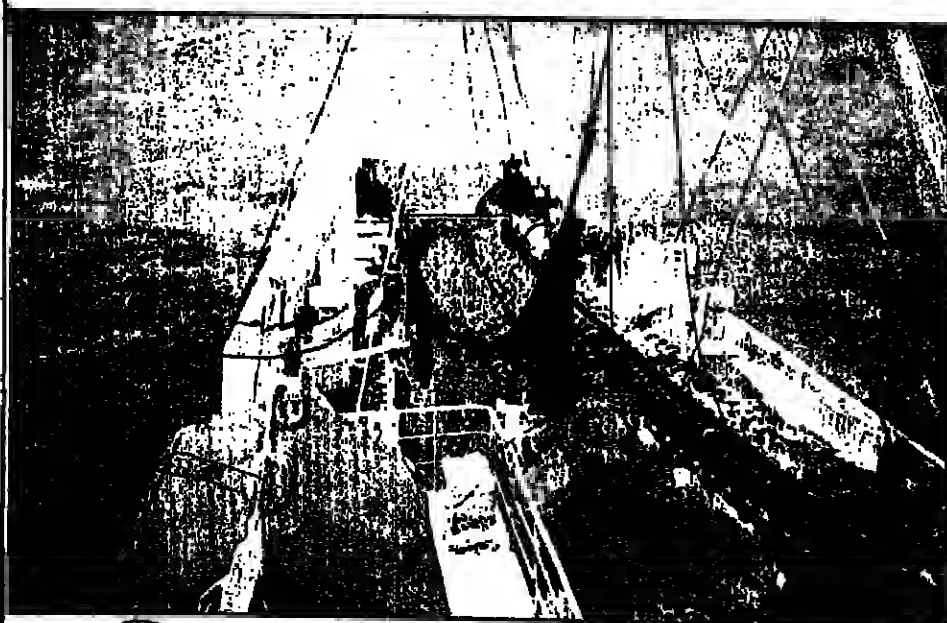




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## BOATS & BUILDERS FREEZER FOR GHANA - Italian yard delivers first of four big ships

THE FIRST of four 1,500 gross ton stern trawlers for the State Fishing Corporation of Ghana has been completed at the Italian yard of Societa Esercizio Cantieri. The vessels are designed for deep sea pelagic, semi-pelagic and bottom trawling.

Overall length is 73.2 metres (240 ft) with a beam of 12 m (39.4 ft), depth of 7.9 m (25.9 ft) and maximum draft of 4.7 m (15.4 ft).

The hull has a fine clipper bow with a bulb below the water and there is a centre line stern ramp.

Propulsion is by a Deutz type SBV 6M 540 engine of 3,000 hp at 600 rpm driving a Linsen controllable pitch propeller through a 3:1 reduction gear.

Auxiliary machinery is also Deutz powered: three 735 hp type BA 12M 816 LLK-R diesels are each coupled to an Alsthon alternator producing 550 KVA 380-volts. A 105 hp Deutz diesel powers an 80 KVA hr-hour generator.

All deck machinery is of Norwegian manufacture and the hydraulic pumps are electrically powered.

Two 13-ton trawl winches are located aft under the galleys. There are two five-ton sweep line winches, two eight-ton gillnet winches, two anchor winches and two 2.5-ton capstans.

The trawler is equipped with a blast tunnel freezer (10 tons a day) and five plate freezers with a total capacity of 30 tons a day. These were supplied by Samit Bncock and the electrically-driven refrigeration pumps are by Howden.

The hold is maintained at a temperature of -25 deg C. Its capacity is 1,090 cu m and it is located forward of the engine compartment with access from the processing deck and from the wheelhouse.

### Electronics

Electronic equipment includes two Decca RM 1226C radars, a Pluth auto direction finder type GEE 277, a Redifon Omega navigator and Anschütz gyro compass and autopilot.

Fish finding equipment is by Simrad and comprises an SU4 sonar, a trawl position indicator and two EX38D echo sounders. Radio equipment is by Dunebrook.

With the first of these trawlers now complete the remainder will follow at approximately four monthly intervals.



The "Sheketeh" — one of four freezer stern trawlers for the Ghana State Fishing Corporation.

### ...and tuna boats are on the way

FOLLOWING completion of the four stern trawlers, Societa Esercizio Cantieri will begin work on two 80.47 metre (264 ft) long tuna clippers — also for the State Fishing Corporation of Ghana.

The vessels will have a beam of 13.72 m (45.0 ft); depth to main deck of 6.63 m (21.7 ft) and depth to weather deck of 9.08 m (29.8 ft).

The refrigerated hold will have a capacity of 2,000 cu m and fuel and fresh water capacities will be 920 cu m and 60 cu m respectively. A 10-ton a day water generator will replenish the latter.

Two engines of 3,000 hp have been specified in the contract. They will be coupled through a reduction gearbox to a single shaft fitted with controllable pitch propeller. Speed will be 17.5 knots.

Two shaft-driven alternators will provide auxiliary power and these will be supplanted by diesel generators. A bow thruster will be fitted.

It is not yet known who is to supply the deck machinery, power block, or the engines.

## Darragh's double-ender

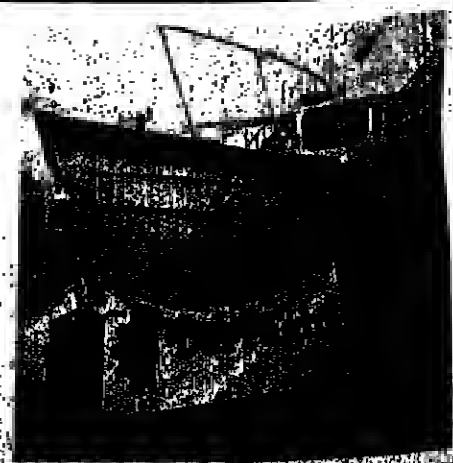
THIS 24 ft (7.3 metre) GRP fishing boat from Ireland is based on a versatile Norwegian-style double-ended hull with simulated clinker planking. But underwater the normal lines flatten out aft to increase the space inside.

The fishing version is designed as a potter with the wheelhouse aft, but a wide variety of layouts are possible.

A BMC 36 hp diesel was fitted in the prototype to give a speed of 8 knots. Alternative engines can be used.

The *Kerrig 24* (pictured here) is built by Darragh, Newbliss, Co. Monaghan.

Particularly attractive is its price, which, at £5,500, makes it very competitive with other similar craft.



## Foam sandwich crabber

THE Gaspe shipyard in Quebec has delivered the first of two GRP combination gillnetter/crabbers to its parent firm Quebec United Fishermen.

The 45 ft (13.7 metre) long hull is sandwich constructed with an 'Alrex' PVC foam core. The deck is marine ply on fir beams with a GRP surface laminate.

The boats are being built on a one-off basis without a female mould. This permits a short series at a reasonable price, says Gaspe.

Named the *Yvan C*, the prototype has a beam of 14 ft (4.3 m), loaded draught of 4.5 ft (1.4 m) and gross tonnage of 20 tons.

Her hold provides room for 30,000 lb of fish and ice and fuel and fresh water capacities are 560 and 40 gallons.

Propulsion is by a Detroit Diesel type 4V-71 developing 115 shp at 1,800 rpm and turning a three-blade 32 in by 24 in propeller through 2.5:1 reduction gear.

### Navigation

Navigation aids include a magnetic compass, radar and echo sounder and the vessel carries an sst radio telephone. Accommodation is provided for a crew of four.

The two Quebec United boats will work out of Riviere-au-Tonnoir on the St. Lawrence river. They are to be leased to co-op members and ownership will be transferred to the fishermen after the first year.

A third, similar boat — a gillnetter — is being built for Curadeau et Freres Inc of Riviere-au-Renard.

## New research vessel is first from Peru yard

PERU'S navy shipyard, has launched the first oceanographic research ship built in the country.

West Germany supplied old and 60 per cent of materials, including equipment, machinery and electronic instruments.

The 1,980-ton ship, named the *Humboldt*, has a length of 76 metres (249 ft); a breadth of 12 m (39 ft); draught of 4.35 m (14 ft) and speed of 14 knots.

She has a fish hold capacity of 160 tons and carries a crew of 48.

She is to be equipped with fishing, oceanography, microbiology, photography, chemical and data processing laboratories.

The *Humboldt* is being built for Imarpe, the Peruvian marine institute. One of her jobs will be to research the food fish resource in Peruvian waters.

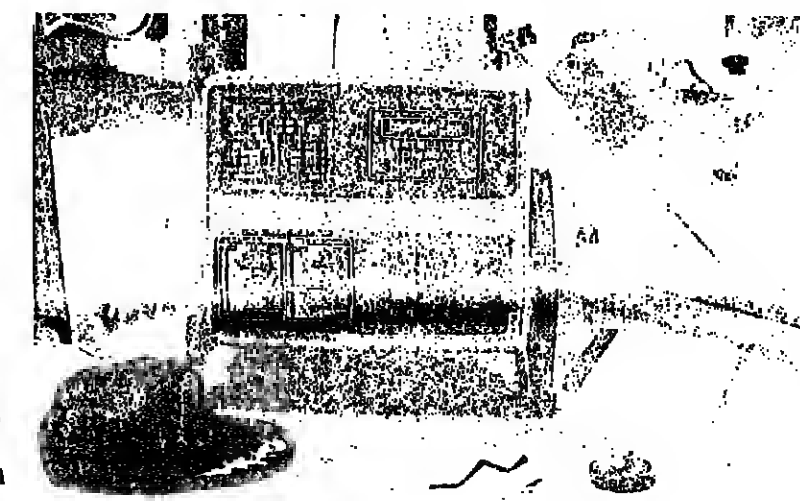
## Carrier ships will fight oil wastes

THE *Almaznyy Bereg*, first refrigerated transport ship of the Kristall type from the Rostock yards in East Germany, has joined the Soviet fishing fleet.

She is 150 metres (492 ft) long and has a carrying capacity of 10,000 tons.

All refrigerated transport ships of this class building in the GDR for the Soviet Union will carry equipment for purifying water polluted by fuel oil and solid waste.

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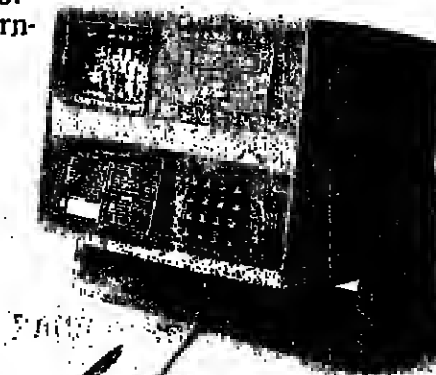
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## BOATS &amp; BUILDERS

ONE FOR  
ACHILL  
ISLAND

ANOTHER recent completion by an Irish yard is the 19.8 metre (65 ft) transom stern trawler *Aelindrew* for Micheal Fallon of Achill Island, Co. Mayo.

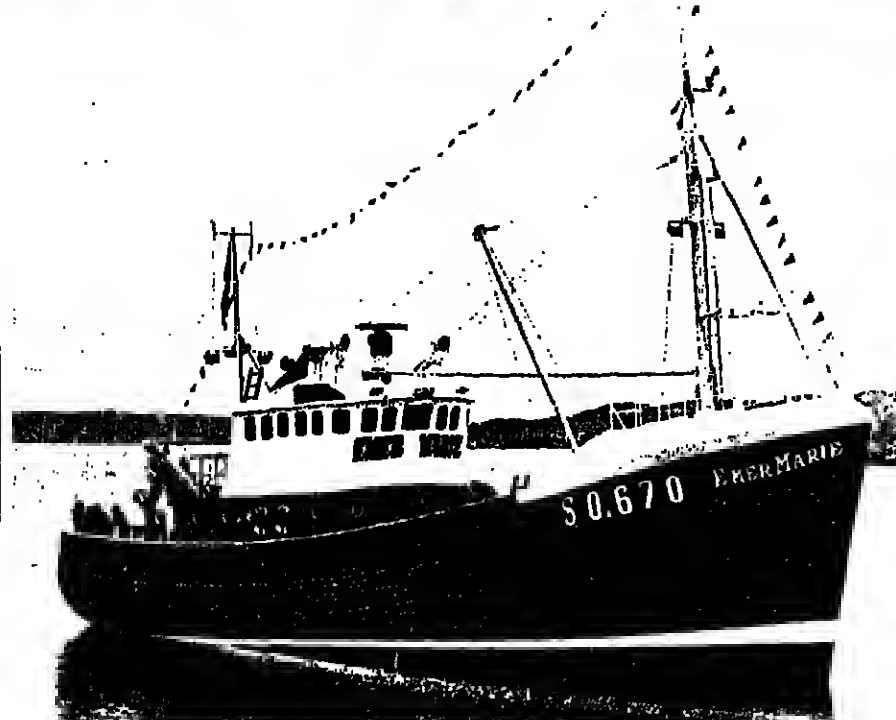
The Irish Sea Fisheries Board yard at Dingle, Co. Kerry built the vessel and financed her under the Marine Credit Plan.

## Iroko hull

The hull, which has a beam of 22 ft and draught aft of 10.5 ft, is carved constructed of iroko and native oak. Wheelhouse, deckhouse, engine seatings, masts and whaleback are steel. Propulsion is by a Kelvin TASC8 diesel engine of 415 hp at 1,200 rpm driving a Kelvin fixed-pitch propeller through Relintjes 4:1 ratio reduction gear.

The vessel will fish with a Jensen type 85 hydraulic seine/rawl winch, and she has a Lossie GHI Net Hauler, Lossie 28 in power block and Lossie LWT ooe-ton landing winch.

*Aelindrew* is very well equipped with electronic aids. Fish finding gear, including a LAZ 72 sounder and LAZ 62 Fishscope, was supplied by Elac, and Sailor furnished her radio range.

She's the  
biggest  
wooden  
trawler  
ever built in Ireland

THE LARGEST wooden fishing vessel ever built in the Republic of Ireland has been completed at the Irish Sea Fisheries Board's yard in Baltimore, Co. Cork.

Named the *Emer Marie*, the 86 ft (26.2 metre) iroko and oak trawler is for owner/skipper Charlie Gallagher — one of the top earners at the port of Killybegs.

*Emer Marie* has an overall length of 85 ft 9 in; beam of 24 ft 7 in; and draft of 13 ft. She is of carved construction and has steel engine seatings and

masts and an aluminium whaleback. Propulsion is by a Caterpillar D.398 7A 'B' diesel engine of 850 hp at 1,225 rpm, turning a Fernholt controllable-pitch propeller through 3.9:1 reduction-gear. Extra thrust is provided by a fixed nozzle.

A Gardner 6LXB diesel (127 bhp at 1,500 rpm) drives the auxiliaries, and there is a Lister ST3MA air-cooled diesel for emergencies.

The trawler's deck machinery consists of Bopp split winches (starboard type 3500 4BS Hydra NG and port type 3500 2BS); Bopp net

drum type ECH 2800; Bopp heaving winch type 3000 1B and Bopp unloading capstan type TAC 29 1000. There is also a Lossie PB5 power block with 38 in head and three-ton pull.

The main hydraulic powerpack is type GURY PL48. Wheelhouse equipment includes Decca Navigator Mk 21 with 350T Plotter; Decca desk hinnacle and Decca 450M autopilot. Atlas supplied a multi-element transducer type SW 6019; Fishfinder type 720SP and 4101 radar with 9 in CRT.

The vessel is equipped with an Atlas

Netsonde 470K, with 470 recorder which incorporates black/grey amplifier for grey line presentation. She carried 750 fathoms of netsonde cable (two-ton breaking strain) and a multi-element headline transducer.

She has a John Krash netsonde winch of 1,800 metres capability complete with all hydraulic parts to work with the Atlas Netsonde.

*Emer Marie's* 400 watt sbb radio telephone is Dancom's model RT102. Other fittings include Ben Superspeed Log, Amplidat talkback system and Dymur Viking vhf.

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ANOTHER  
FOR FAROE

CAMPBELTOWN Shipyard in Scotland has completed the third of four steel stern trawlers on order for Faroese fishermen.

Named the *Vesturbúgvín*, she is virtually identical to the trawler *Fram*, delivered by the yard to Torshavn in September.

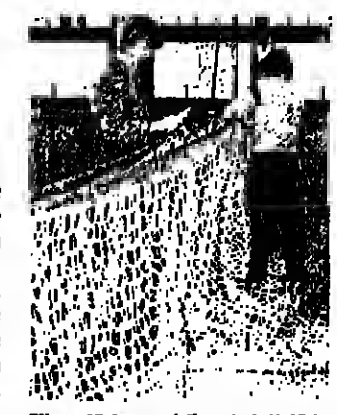
These vessels — designed specially for fishing inside Faroese 200-mile limits — have an extended fo'c'sle which provides a large sheltered working deck.

The fo'c'sle also incorporates the accommodation — a skipper's cabin, three two-man crew cabins and galley/messroom. The fish-room is insulated and has a capacity of more than 150 cu m.

*Vesturbúgvín* is powered by a Mirrieux Blackstone ES1.6 main engine of 685 hp at 750 rpm, and she has two Lister HRW6 auxiliaries.

She is fitted with gearbox, sterngear and controllable-pitch propeller by Linsen and a Kort nozzle.

Deck gear includes Rapp



bride winches, trawl winches, gilson winches and anchor windlass.

In the wheelhouse there is a Furuno radar, Simrad echo sounders, fish loop and Lorin C, and Sailor radio telephone and vhf sets.

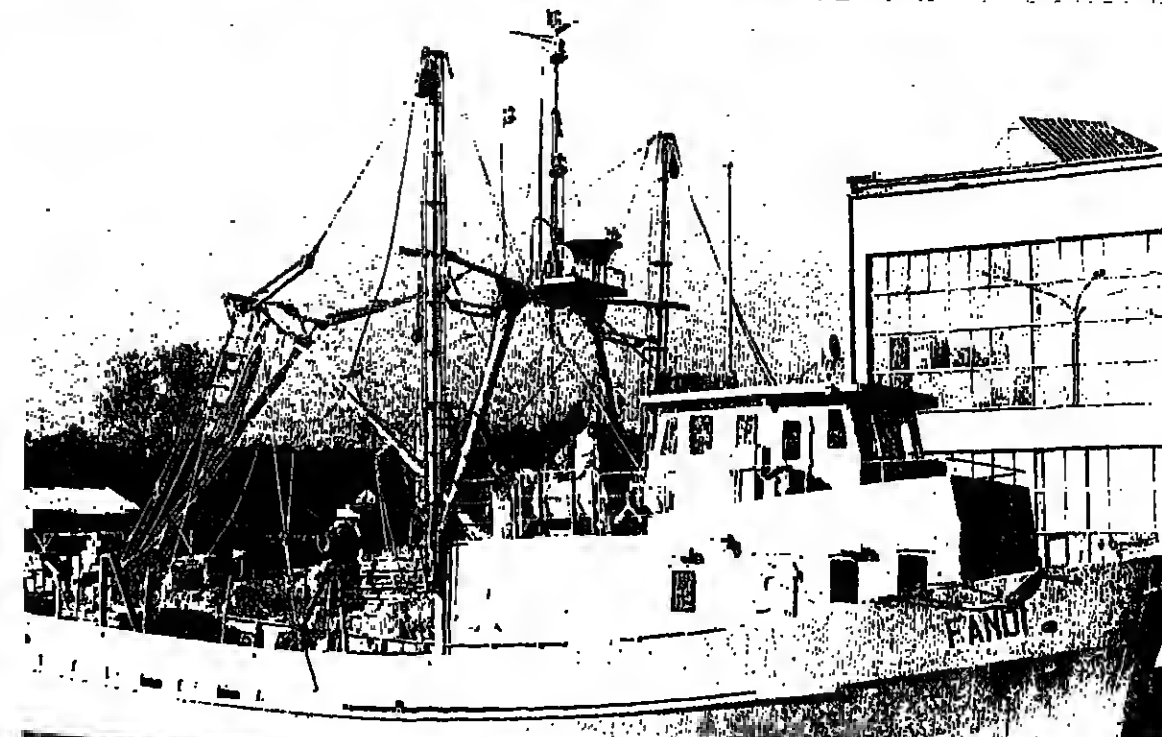
The *Vesturbúgvín's* principal dimensions are length 26.9 metres; length bp 23.1 m; moulded breadth 7.2 m and moulded depth 3.75 m.

## Italian yards relocated



TWO OLD established boatbuilders in Vleragglo, Italy, have moved to new premises. The two identical sites are located on a new dock basin at Vleragglo.

The yards are Cantieri Nevele Codocasa and Cantieri Nevele Giorgetti. Both are family businesses and the move will relieve the congestion in the building basin at Vleragglo.

POLAND  
DELIVERS  
FIRST OF  
AFRICA  
CUTTER  
SERIES

THE Wisla Shipyard in Poland has handed over the first in a new series of 23.2 metre (76 ft) long shrimp trawlers designed to fish in the Gulf of Guinea.

Named the *Fandi*, the vessel provides accommodation up to African requirements for a crew of 12.

The skipper and engineer each have air conditioned single-berth cabins and there is a ventilated four-berth cabin below deck and a six-berth cabin in the deckhouse.

The deckhouse also accommodates the galley and messroom.

The new KR-24 cutter series, of which *Fandi* is the prototype, features an all-welded steel hull with high forecabin and relatively large freeboard.

Deckhouse, wheelhouse, living quarters and engine room are forward and the hold, fuel bunkers and stores are located amidships and aft.

The vessel has an endurance of 21 days and her foam-insulated fish hold can be maintained at a temperature of -25 deg. C.

Designed in Poland and built to Polish Register of Shipping classification +MK II Ryb, *Fandi* is 7.35 m in beam, has a depth of 3.65 m, mean draught of 2.9 m and hold capacity of 85 cu m.

Propulsion is by a diesel engine of 425 hp at 1,250 rpm turning a fixed-pitch propeller for a speed of around nine knots.

The engine room also houses an 80 hp auxiliary diesel with 18 kW generator and the cooling compressor. There are also two hydrophores with pumps, an electrical switch panel and the reefer plant controls.

Her plate freezer is housed in a separate deckhouse compartment and has a throughput of 4,000 kilos of shrimp a day frozen to a temperature of -25 deg. C.

The hold is insulated with 120 mm thick polyurethane foam and lined on its lower part with plywood and galvanised steel sheeting. Sides, bulkheads and deck are covered with galvanised plates only.

On deck, the main three-drum trawl winch can haul 4.5 tons at 40 m/min and the warps are trailed from twin 8.5 m booms.

The winch is mechanically driven by roller chains from the main engine which makes it easier to handle by a relatively unskilled crew.

Nets for this trawler series have been designed by the Polish Sea Fisheries Institute at Gdynia and made at the Institute's Technical-Experimental Department.

Radio and navigational aids include a 200 watt intermediate-wave radio telephone, a vhf radio telephone, radar, vertical echo sounder and an autopilot which works with a magnetic compass and hand-hydraulic steering gear.

As reported in the August issue of *FNI*, the KR-24 cutters have been developed specially for the African market, but it is hoped in Poland that they will also appeal to other countries seeking to exploit new 200-mile limits.

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## Meetings and exhibition

THE TWELFTH US Fish Expo took place over four days in the Hynes Veterans Auditorium in Boston at the end of October. It was supported by a record 313 exhibitors, compared with 262 in Seattle in 1977 and 219 in Boston in 1976. It was visited by nearly 12,000 fishermen, manufacturers and others professionally connected with the fishing industry. It displayed a huge variety of equipment and ranks among the largest fishery exhibitions to be held in recent years.

Here we describe three from the hundreds of products presented at Fish Expo or represented in model form, in drawings or in photographs.



VISITORS watch a demonstration of Britain's Torrymeter for testing fish freshness.

# BOSTON EXPO

## Unloader that moves to meet the boats

ONE OF the most interesting machines at Fish Expo was so big that it could only be shown by a photograph.

It was the latest development of the air unloader designed and made by the Atlantic Bridge Company of Lunenburg, Nova Scotia, and is an entirely self-contained unit mounted on a 45 ft flatbed trailer. It was ordered for Newfoundland and will follow the boats as they move during the seasons.

With the portable unloader, the advantages of mechanical discharging will be greatly extended and fishermen will be saved long trips to and from the grounds.

### Chamber

The Abco system features a combined vacuum chamber and water trap. Twelve-inch diameter telescopic pipes link the fish hold to the chamber. As the fish enter, air flow speed is reduced and they slide along the smooth chamber bottom in a stream of water moving very slowly at the same speed as they are.

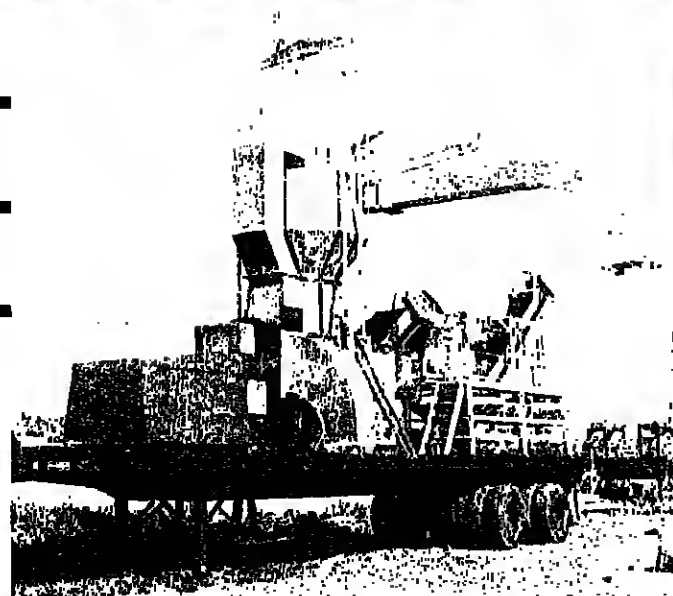
Abco says that its unloaders can handle any fish. If it can enter the 12-inch pipe, the fish will be delivered "unharmed and washed."

Widely applied in Canada and finding export markets in several other countries, the system is a boon both to the factory owner and to the small co-op type port where it cuts down the often-heavy cost of unloading.

The portable plant for Newfoundland is designed for up to 45,000 lb an hour and can, says Alec W. Gilling of Abco, "handle any kind of fish from capelin up to North Atlantic cod."

With its own weigh station and discharge conveyor, the unit is powered by a Deutz 75 hp engine.

The expansion of the industry following the 200-mile limit has brought very



Abco self-contained fish unloader. Mounted on a flatbed trailer, this unit was built for Newfoundland and can follow the fishing fleets around the coast.

busy times to Abco which makes a variety of fish handling and processing plant in addition to the unloader.

Abco has also just negotiated a joint venture agreement under which its full range of equipment will be made in New Zealand by a local engineering company.

The company is K. Douglas Ltd., of Levin on the South Island. From there it will supply equipment to New Zealand industry, to Australia and to other countries in the

South Pacific region. The companies will exchange technologies and will co-operate in the future development.

While negotiations were in progress the New Zealand company sent Don Garthwaite from its works to spend some time at the Abco factory. And Abco design draughtsman Roger Davidson spent three weeks in the Douglas factory.

The New Zealand company has already begun making Abco plant.

## Marco economy

SO GREAT was the interest in Marco's new TILiner system of mechanised and partly automated longlining that the stand at Fish Expo handed out 500 catalogues in a few days and had to send for more. Three systems were sold in visiting vessels owners, and firm enquiries should lead to many more sales.

Nothing that Marco designs and introduces may ever match the world-wide success of its Purcell power line, but the TILiner system could come a creditable second if we are to judge by the interest in the system and by reports of the performance of the first few to be installed in US north-west coast boats.

### Claims

Strong claims for the TILiner (which we briefly described earlier this year) are that it can be used by a wide range of boat, that it can be installed without the need to modify the vessel, and that it

provides automatic longlining at an economic price — about 25,000 dollars ex-works in the USA.

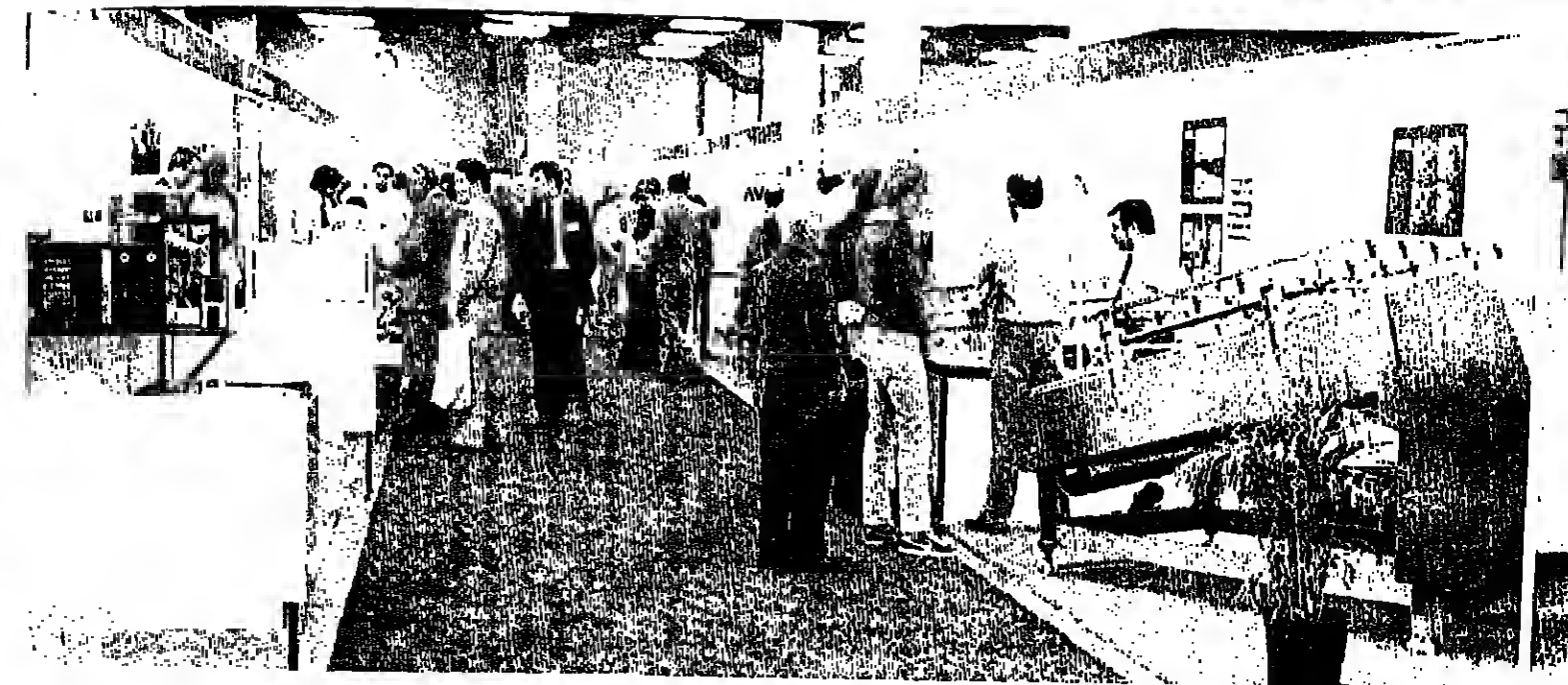
Main units of the system include a set of spools containing the line, snoods (gunions) and hooks, a bait cutter and baiting trough, a powered hauler, and a unique roller to prevent snoods winding around the line.

### Spools

In wet gear, two spools are mounted on a settling stand which is mounted slightly forward of the bait trough and exit chute. As the buoy and the buoyline are released and the boat moves forward, the line with its snoods and hooks is pulled through the bait trough hooking the bait which has been prepared in a cutting machine.

Still brushes to the exit chute ensure the bait is securely hooked and that loose bait is not wasted by being dragged overboard.

When all the line of a spool is set, the boat is stopped. The two spools on the stand are swivelled 180 deg., the line



FISH EXPO in Boston, and the British group of stands in the Hynes Veterans Auditorium.

# BIGGEST YET

## longline system pulls in some big crowds

from the used-up spool is connected to the line ready for setting, and the boat moves forward again. When the desired number of spools is set, the second buoy and line are released.

Hauling can be done by two men, one at the gunwale and the

other between the hauler and the power head.

The line comes aboard over the TILiner roller. Designed and patented by Marco and one of the outstanding features of the system, this roller ingeniously prevents snoods from winding

around the line as they come in. At the roller, the first crewman gaffs the fish and makes sure the TILiner is properly adjusted.

"With remote engine and steering controls properly located," says Marco, "the man gaffing can also control

the boat during hauling." The second man controls hauling by operating the foot pedal. This is a dead-man control.

He also places each hook on a spoke as the line comes from the hauler. The line is fed from the hauler onto a spool. While

rotating, the power head oscillates to give an automatic level winding action to spread the line evenly over the spool. When the line is wound in, the spool is simply moved across in the settling stands, and the boat is ready for the next set.

### We are all in the same boat — depending on a good catch

A good catch requires first class equipment. We are supplying Norwegian quality products for all fishing methods:

Powerblock floats, cylindrical floats, net buoys, bar buoys etc. Our products are the result of many years of experimenting and testing during the winter fishing in the Baranta Sea, as well as the general fishing in tropical waters.

Buoyancy of Powerblock floats: 1.2-7.5 kg.

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Buoyancy of Net buoys: 2-310 kg.

To be able to give our customers in West Africa the service required, we have opened our own sales office in Las Palmas, Canary Islands.

All our products are warehoused in Las Palmas.

### Nous sommes embarqués sur le même navire — notre avenir dépend de nos captures.

Une bonne pêche nécessite un équipement de premier choix. Nous fournissons du matériel norvégien de qualité pour tous les genres de pêche:

— Powerblock, flotteurs type cylindrique, bouées de tous modèles etc. . . .

Nos produits sont le résultat d'une longue expérience, et ils ont été éprouvés, aussi bien pendant les campagnes de pêche hivernales en mer de Baranta, que dans les mers tropicales.

Flottabilité des flotteurs type Powerblock: 1,2 à 7,5 kg.

Flottabilité des flotteurs type Cylindrique: 0,3 à 1,6 kg.

Flottabilité des bouées: 2 à 310 kg.

Pour donner satisfaction à nos clients de l'AFRIQUE DE L'OUEST, nous avons ouvert une agence et un dépôt à LAS PALMAS — CANARIES.

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Una buena captura depende de que el equipo reúna las mejores cualidades.

SCANMARIN fabrica productos de calidad reconocida y para todas las modalidades de pesca: flotadores de ensastre, flotadores cilíndricos, boyas hinchables para redes, boyas de situación, etc.

Estos productos son el resultado de muchos años de experiencia, y probados exhaustivamente, tanto en los mares tropicales, como en los helados mares del Invierno nórdico.

Flotabilidad

Flotadores de ensastre De 1,2 a 7,5 Kgs.

Flotadores cilíndricos De 0,3 a 1,6

Boyas hinchables De 2,0 a 310,0

Boyas de situación De 7,5 a 258,0

Con el fin de servir más rápida y efectivamente a nuestros clientes de África Occidental, hemos abierto oficina propia en Las Palmas de Gran Canaria, donde disponemos de existencias de todos nuestros productos.

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إن الصيد الناجح يتطلب معدات على مستوى عالٍ  
ونحن نوفر منتجات نرويجية ذات نوعية جيدة لجميع  
وسائل صيد الأسماك بقدر الإمكان.

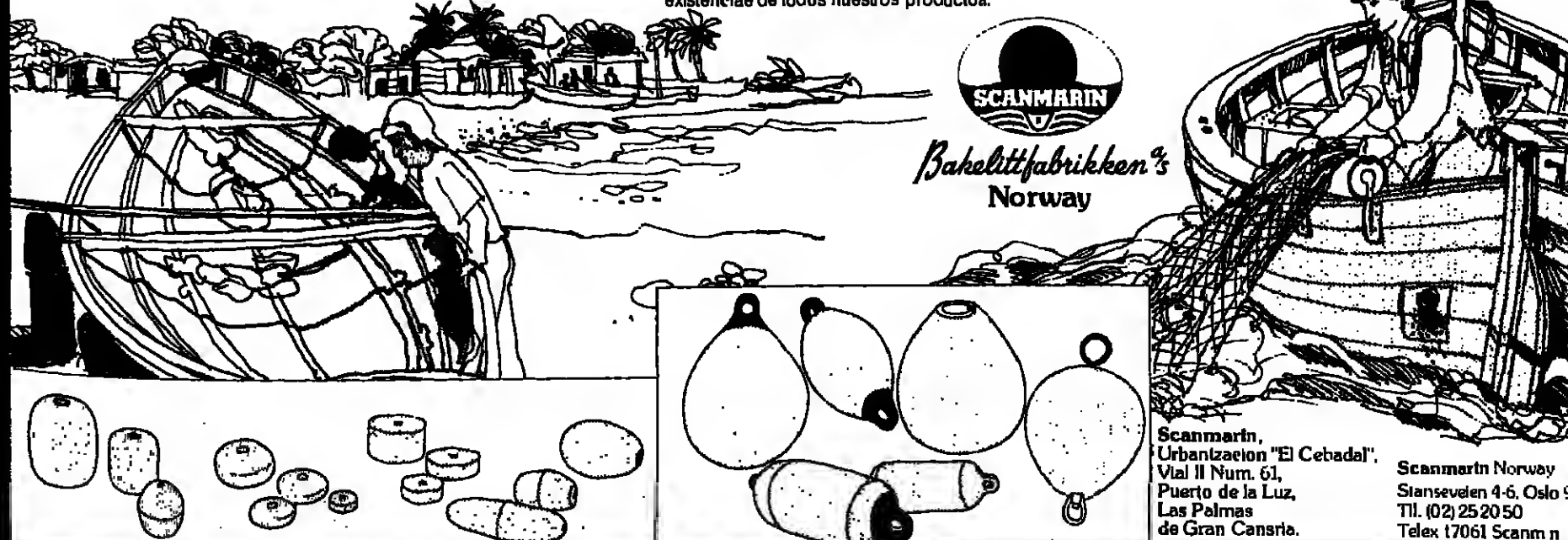
وتجربتنا هي نتيجة تجارب سنين طويلة وقد جرى اختبارها  
في مناطق صيد الأسماك النشطة في بحراريك وبالنسبة  
في صيد الأسماك في مياه المناطق الاستوائية.

نوعية معدات بارووك	٢٢	٧٥	كيلوغرام
العوامات الانطونية	٢٢	١٦	"
عوامات الانشباك	٢	٣١٠	"
العوامات الفضية	٧٥	٢٥٨	"

ومن أجل تزويد عملائنا في غرب إفريقيا بالمعدات المطلوبة  
نحتسب مكتباً خاصاً بنا في لاس بالماس وجنر الكساري .  
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## Outboard power kit for gear hauling

SIX YEARS ago Oregon State University, with the help of the US Sea Grant Program, developed and tested an hydraulic pump that would enable a small boat to drive gear hauling machines from an outboard motor.

The idea was to try and meet the needs of outboard-powered skiffs and dories fishing in the Pacific north-west. Most American boats have very small crews and make use of such mechanical aids as line and net haulers, net drums and trolling guides.

This development, therefore, offered enormous possibilities and, when it was reported in *FMJ*, enquiries came in from all over the world.

But the prototype had some problems and the most serious was that the top and bearing and crankshaft were rigid and so pump and engine vibrated at different frequencies, causing rapid wear.

Over about three years, two hydraulics experts in Maine worked on the problem and came up with two solutions. The one is a patented centre-

seeking flexible coupling and the other a shock-absorbing mounting. The pump vibrates at the same frequency as the outboard flywheel to prevent wear and give "an efficient, durable and low-maintenance" power-take-off system.

This is now being marketed by Sea-Power-Pac Ltd., of August, Maine, in kit form. The kit, which was shown at Fish Expo, comes ready to install except for the hydraulic motor and the control valve. It is limited to electric-start engines.

It is presently adaptable to Johnson, Evinrude and Mercury outboards, from 50 to 140 hp. More kits are being developed for additional hp ranges. The unit has been extensively tested under actual fishing conditions for two years aboard New England lobster boats.

"It sells in the United States for about \$1,000," said Russell F. Gee, vice-president, sales. "It has power capability which before came only from inboard hydraulic systems or from separately-mounted auxiliary engines."

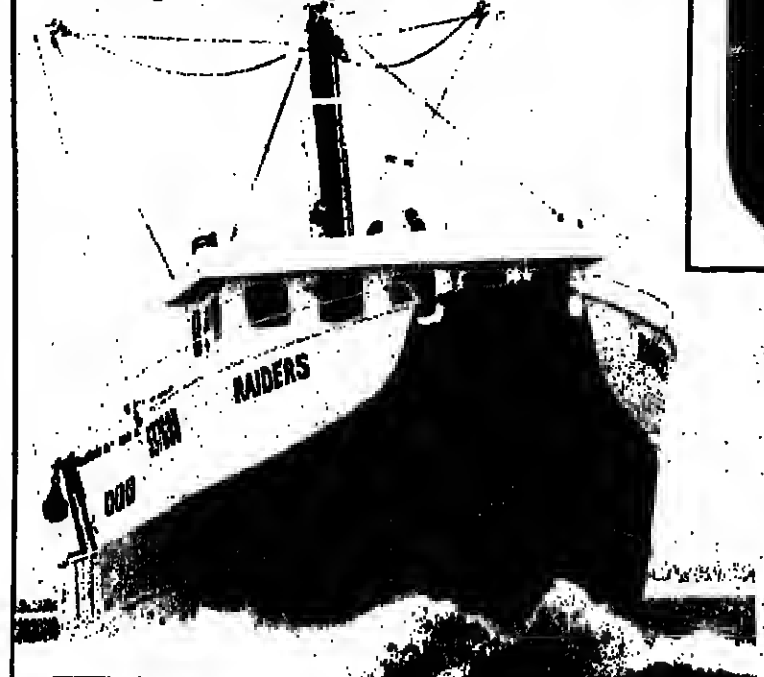
"Very good results have been reported by lobster fishermen using 18 to 28 ft boats."





# U.S. BOATS BOOM

FROM Atlantic Marine — the "Raiders" a 95 ft scalloper working out of New Bedford.



THE United States fishing industry is expanding into the 200-mile limits claimed for it since March 1977; and on the east, west and south coasts busy boatyards are working all-out turning out new vessels to match the new opportunities.

This surge in boatbuilding is accompanied by an intense and still-growing interest in improved technology.

"I am learning that, in fishing, first class is the best way to travel," said one east coast skipper visiting Fish Expo in Boston in October. He and many other top fishermen are looking for the best in boats, and in the equipment they install for finding, catching and handling the fish.

Vessels are getting bigger and several newcomers indicate that there will be a number of ships 140 ft and larger.

But the real emphasis is on quality and performance. American fishermen appear to be seeking the type of craft they have thought about for years and could not afford.

Now the dreams are being realised. Design ideas long latent are moving from drawing board to building way and out to the grounds. And the yards are adjusting and developing to meet the challenge.

Compared with yards in most other major fishing countries, they have one great advantage. Under the Merchant Marine and Shipping Act of 1916 (known as the Jones Act), any boat larger than five tons can only participate in American coastal fisheries if it was built in the United States. And coastal fisheries now stretch right out to 200 miles.

But protection does not extend to the equipment in the vessel or the engines that power her. The boatbuilding boom offers huge new opportunities for manufacturers around the world.

## Joining in

The most enterprising of them were among the 113 exhibitors at the 1978 US Fish Expo and some even found time from the press at their stands to join in the seminars that are a feature of this yearly exhibition.

In the first of the seminars, three men closely involved in US boatbuilding looked to the fishing vessel of the 1980s.

John Gilbert of Boston said he had been designing fishing craft for 16 years and implied that he had never before been so busy.

His recent work has included a 94 ft stern trawler which will start with a series of four. The most remarkable thing about this vessel is that it will be of single skin GRP and will be built to the high classification standards of the American Bureau of Shipping.

## Coming fast

Speaking for the west coast, Seattle naval architect Benjamin F. Jensen saw the trend mainly in trawlers that could be adopted for other methods when required.

Combination vessels are coming in fast on all coasts. It seems that they will be more for seasonal changes by adjustments when in port than for switch fishing at sea. The king crab ships, which occupy quality builders such as

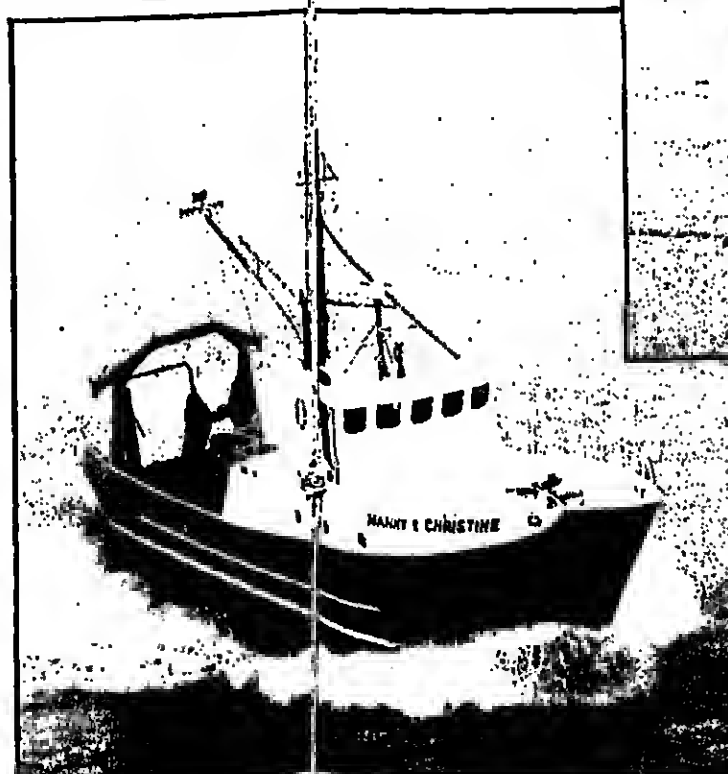
Marco in Seattle, are getting bigger and more self contained. They are also being designed for other types of ship — one of 125 to 140 ft types of ship — one of 125 to 140 ft types of ship — one of 125 to 140 ft types of ship.

What size the top ships of the future will be was difficult to guess. "Some say 200 ft, some 150 ft," said. "There may, in fact, be a trend towards larger ships fitted out for processing."

One development that was clear was that many owners on the west coast were looking to European products. This included the sleek turning engines of 1,500 hp and nozzles, controllable pitch propellers, and hydraulic deck machinery.

## New trend

The trend was towards combination vessels, where the focus before was on standard trawlers for the local shrimp fleets. And more



FROM Boston — the "Immigrant" — an 85 ft New England coast trawler. Her home port is New Bedford.

ANOTHER New Bedford boat. The 83 ft trawler "Manny & Christine" was delivered recently by Atlantic Marine.

## Wide choice

Although constrained by the Jones Act, the American fisherman has a wide choice of builders for his boat. The new American Fisheries Directory lists more than 400, from moulders of GRP skiffs up to shipyards able to construct big stern trawlers.

But even a very generous quality and experience requirement might cut this down to below 150 yards capable of coming up to the rising standards.

## Yards work

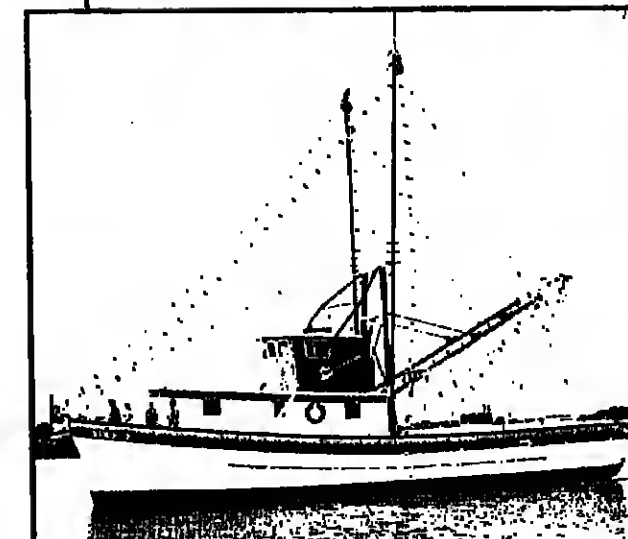
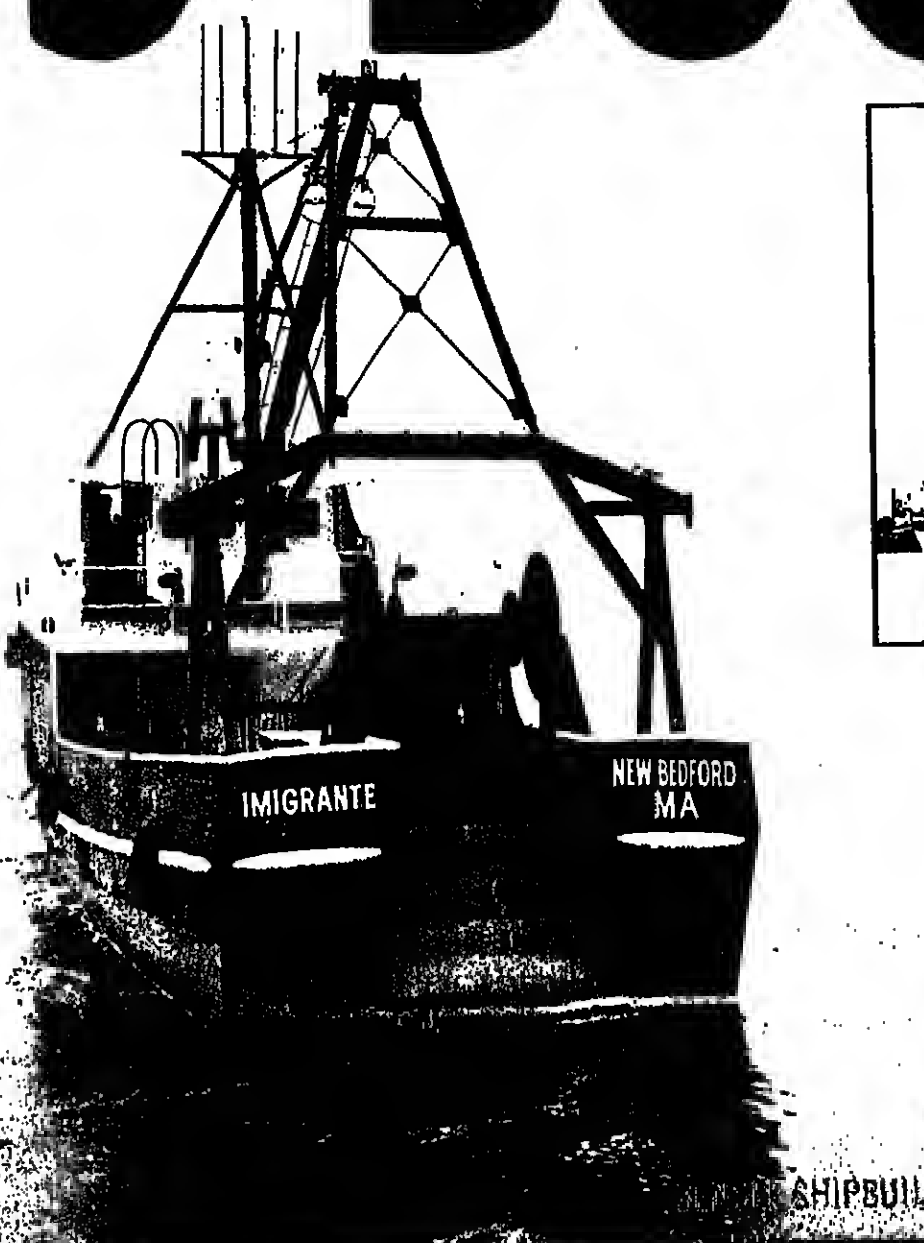
## Flat out

## to fulfil

## the dream

## American

## ship



▲ Another New Bedford boat. The 83 ft trawler "Manny & Christine" was delivered recently by Atlantic Marine.



▲ Another New Bedford boat. The 83 ft trawler "Manny & Christine" was delivered recently by Atlantic Marine.

## Scania is around where the 80's are planned

Ships of all kinds need powerful and efficient engines that are economical and reliable in operation. Engines that will have to manage hard work, often with high continuous output. Engines, perfectly adapted to their duties to give maximum power.

Where others only deliver engines, Scania also delivers long experience and know-how. To Scania it is more important to offer the proper solution than just to get an order.

Scania is around when the ships of the 80's are taking shape on the drawing board. This ensures that a Scania diesel is always perfectly adapted to its duty.

Ships like liners, tankers, freighters, tug-boats, fish-

ing-boats or ferries all over the world have Scania diesels for power. Scania diesels are used in single and multi engine installations for propulsion, cranes, pumps, gensets and other kinds of equipment.

Whatever the combination, Scania diesels are powerful and reliable. And most important of all, they are built all through for marine use.

Scania means reliability in operation and economy. Scania also means an efficient service organization and accessibility to spare parts practically all over the world. With Scania around from the start, there is strength and security.

Scania means more

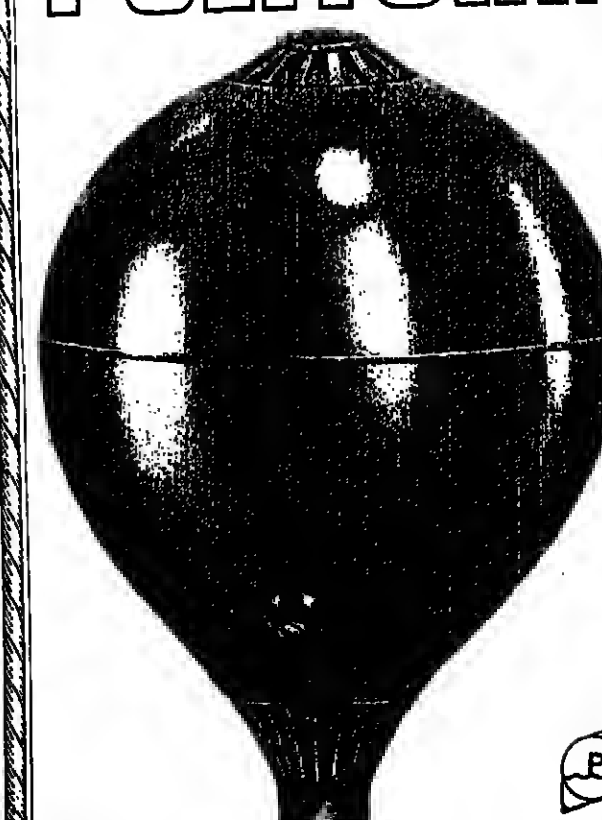


SCANIA MARINE DIESELS ARE AVAILABLE IN SIZES FROM 39 kW (50 hp) TO 201 kW (270 hp).

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## US BUILDING BOOM

QUALITY  
YARD  
JOINS  
THE RUSH

ATLANTIC Marine in Jacksonville, Florida, has the reputation of being one of America's quality fishing boat builders. Like other yards in the southern states, Atlantic Marine began by supplying the local industry. But it has looked further than most and its vessels now fish in several countries.

The yard builds five standard fishing boat hulls and it also recently completed a 170 ft long oceanographic research ship.

Among the types it offers are a 109 ft combination king crabber and trawler and an 83 ft boat for hake fishing off California.

Atlantic Marine has and that, as the pressure grows on the traditional west coast builders of king crab and other North Pacific vessels, fishermen are looking east and south. And yards there are developing designs to meet the new requirements.

One recent delivery is the 95 ft *Raiders*, a scallop fisher, working out of New Bedford and powered by Caterpillar D398 engine. Another, also based on New Bedford, is the 83 ft *Manny & Christine*, powered by a Caterpillar 3412



DESCO'S 2,100th wood boat — the "Singleton Fleets 17". She is owned by one of the fastest growing companies in the US Gulf shrimp industry.

## ORDERS STILL FLOOD IN

REFLECTING the company's increasing business with fishermen working in waters far more turbulent than those of a US Gulf shrimp, Desco Marine has introduced a new "Whaleback" design for its standard 75 ft GRP boat.

This has been developed specially for use in waters off Alaska, the New England coast and other areas where the Florida builder is finding a growing market.

Desco builds fishing boats at the rate of about 16 a month — eight 73 ft wood, four 86 ft wood and GRP, and four 75 ft GRP. But, even with this high output, the company is presently hard-pressed to meet the run of orders.

The huge shrimp industry is still the main Desco customer, particularly for the 73 ft wood boat.

In October, the yard delivered its 2,100th wood boat and appropriately this was one of a large series for a shrimp fleet. The *Singleton Fleets 17* was the seventeenth of 37 similar boats ordered from Desco by Singleton Fleets Inc.

## Growing fast

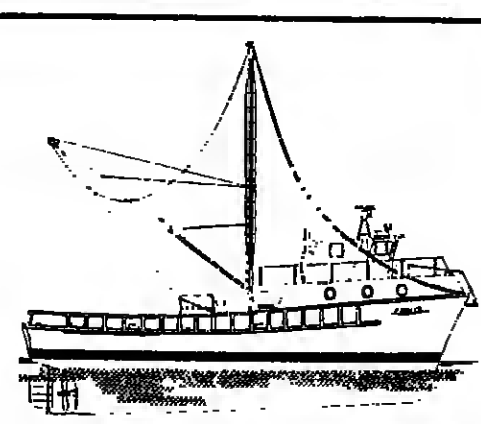
Operating from Tampa and Key West in Florida and Freeport, Texas, Singleton is one of the fastest-growing companies in the Gulf-centered industry.

President Henry C. Singleton Jr has a goal of 50 boats in his fleet by the end of 1979.

Future plans, according to Mr. Singleton, include the purchase of Desco 73 ft boats in lots of five, with a minimum order in 1979 for 20 boats.

The *Singleton 17* is registered in Freeport. She is powered by a Caterpillar 3408 engine of 365 hp.

Desco Marine clocks up its 2,100th wood completion and puts a whaleback on a standard 75



THE new Desco 75 ft GRP "Whaleback" boat developed for rougher fishing waters off Alaska and the New England coast.

Another Desco milestone in October was the launching of the company's 100th wood and GRP 68 ft boat. The *Banjo II* is the second 68 ft Desco boat for Jack Ritchey and Fred Gurr of Newport, Oregon. And she is the 11th GRP boat from the company for the west coast. Another seven will have been delivered by the end of 1978.

The two *Banjios* are rigged for pair trawling which Ritchey and Gurr are developing on the west coast.

## Power plant

The *Banjo II* is powered by a Cummins KT-1150-M engine developing 365 hp at 1800 rpm and turning a Columbia Fishmaster propeller through a Twin Disc MG-514 six to one reduction gear.

Cummins have done well in Desco boats this year, with their engines in 37, compared with only four in 1977.

Business from the US industry has not turned the Florida company away from its growing interest in export markets. It sees these as an essential foundation for the future and has put considerable effort into developing boats suitable for fishing conditions as different as those of New Zealand and West Africa.

Last month three 75 ft GRP boats left Florida on their long voyage for Desco's latest outlet — New Zealand.

The boats are small stern trawlers, built in seven months after international marketing manager A. H. Welhe had visited New Zealand to study local requirements. They were completed within three months of the order being finalized.

A French company, Kristanord of Nice, is having four 75 ft boats built for shrimp fishing off Gabon in West Africa and there are plans for another 14 similar boats.

## Big market

Latin America is another important export market. Four 68 ft boats were built for Pesen SA of El Salvador in later 1977 and 1978.

Multiples of El Salvador took delivery of two 68 footers in October and two more in November and will use them to catch langostinos. The company has an option on another eight boats during 1979.

A third company, Acopuerto, takes delivery of a 68 ft combination stern dragger and shrimp trawler this month.

## Marco starts crab processor

MARINE construction & Design Company (Marco) of Seattle has laid the keel of the first in a series of 160 ft processing combination boats designed for king crab fishing and for trefling.

This latest Marco vessel will have her wheelhouse forward and a full

working deck aft. She will be a shelterdecker with a processing deck. The first ship will concentrate on king crab processing. She will be powered by two D398 Caterpillar engines turning a single propeller.

This ship will be followed by a 160 footer equipped for trawling and

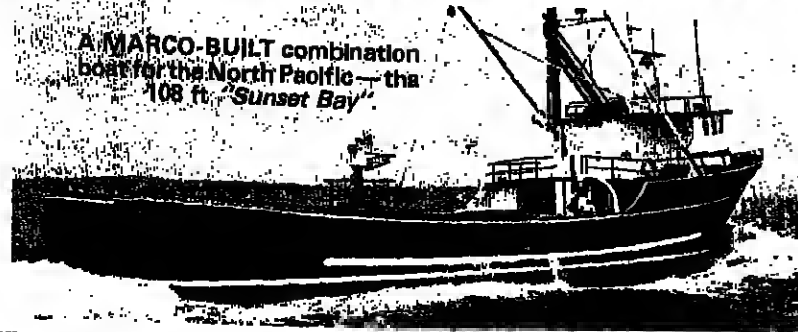
processing.

Marco is busy meeting the heavy demand for its standard 94, 108 and 122 ft combination ships.

One of the latest deliveries was the 108 ft *Sunset Bay* built for Stewart Investment Company.

She was designed for pot fishing, trefling or any North Pacific high seas fishery requiring a large stable platform for heavy weather operations. A second similar ship was delivered in mid-November.

Each is powered by an 850 hp Caterpillar D398 engine. Another Caterpillar engine, a D3408, drives both a 155 kW generator and a Marco DP48 hydraulic pump drive which will be used for powering trefling winches.



A MARCO-BUILT combination boat for the North Pacific — the 108 ft "Sunset Bay".

## US BUILDING BOOM

A BIG CRABBER FROM  
NEW ORLEANS

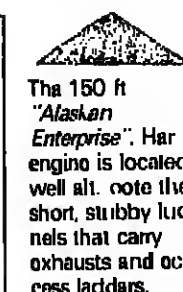
ONE OF the largest vessels ever for the Alaskan crab fishery was recently delivered to Francie Miller Company of Seattle. She is the *Alaskan Enterprise* built by a relative newcomer to fishing — Hatter Marine of New Orleans.

Her overall length is 150 ft on a beam of 38 ft and depth of 16 ft. The hold is 18,800 cu ft of which 14,317 cu ft can be refrigerated. A deck area of 615 sq ft has been retained for the installation of processing facilities later.

Propulsion is by twin GM diesels, type 16V149NA, together developing 1940 hp for a speed of 12.6 knots.

Two 12-ton hydraulic deck cranes provide the lifting capacity, and there is storage space for more than 400 large crab traps. The accommodation has cabins for 23 crew.

The *Alaskan Enterprise* has a 350 hp Omnitruster JT-700 bow thruster which can be either manually operated or connected to the autopilot.



The 150 ft "Alaskan Enterprise". Her engine is located well aft, note the short, stubby funnels that carry exhausts and access ladders.

NOW IT'S 70, 90 AND 94 ft AS...

GRP hulls grow  
and grow

IF PRODUCTION plans of five leading builders are any indication, a large part of the future US fleet will consist of GRP boats.

Exulting in this prospect, Gordon Shindle, marine market manager of Owens-Corning Fiberglass Corporation said: "Extension of limits to 200 miles has led to re-evaluation of boat design and construction. Fishermen need boats that can stay out longer and store more fish."

Commented Rodney Thompson, president of Thompson Trawlers of Tusville in Florida: "The trend to bigger boats is a

dramatic step in increasing the size of catch and profits."

The Thompson yard expects to be turning out 40 ft vessels at the rate of one a month in 1979. But the yard is best known for its economically priced GRP utility inshore boats. They are high-speed, versatile combination craft and the best can earn \$35,000 and more a year for a one or two man crew.

Meanwhile, Desco of St. Augustine in Florida has built nearly 170 of its 75 ft GRP boats, and in October celebrated the completion of its 100th 68 ft wood and GRP boat. "We have never before experienced the rate of orders we are getting now," said Desco vice-president John Colburn.

Bruno & Stillman of Newington, New Hampshire, began with 35 and 42 ft GRP boats, and then added a 55 footer. It turns out around 100 of these three sizes in a year. It is now engaged in the largest American GRP fishing vessel project — a series of four 850 hp stern trawlers 94 ft 4 in long.

The use of a mould without plug has helped to keep down the cost of construction.

The boats, designed by John Gilbert Associates, will fish off New England using bottom and mid-water trawl.

BENDER:  
one of  
the giants

TURNING out between 40 and 50 vessels a year, all of them larger than 78 ft, Bender Shipbuilding Company of Mobile, Alabama, is one of the giants among US fishing craft builders.

With its capacity, Bender can spread its standard hulls over some 30 types of fishing vessel, from 78 ft up to 130 ft. And a 165 ft design is now available for a combination fishing ship.

"We have taken orders from all over the United States," said general sales manager John Logan. "Our yards are working to full capacity."

For its two designs (107 ft and 130 ft) for Alaska king crabbers, Bender has gone back to an earlier style with wheelhouse aft which was once traditional in the fishery.

Other vessels now being built include 90 and 98 ft stern trawlers for California and New England; a 98 ft crabber for the Pacific north-west; a 127 ft combination vessel, 98 ft scallop dredgers for New Bedford, and 75 and 78 ft shrimp trawlers, some of them for Japanese owners operating in Latin America.

Delta Marine in Seattle, Washington, is to add a 70 ft multi-purpose trawler to its range in 1979. According to Delta's sales manager, Bruce Gustavson, the new boat is scaled up from a 58 ft GRP boat. It will be used for king and Tanner crab and salmon tending.

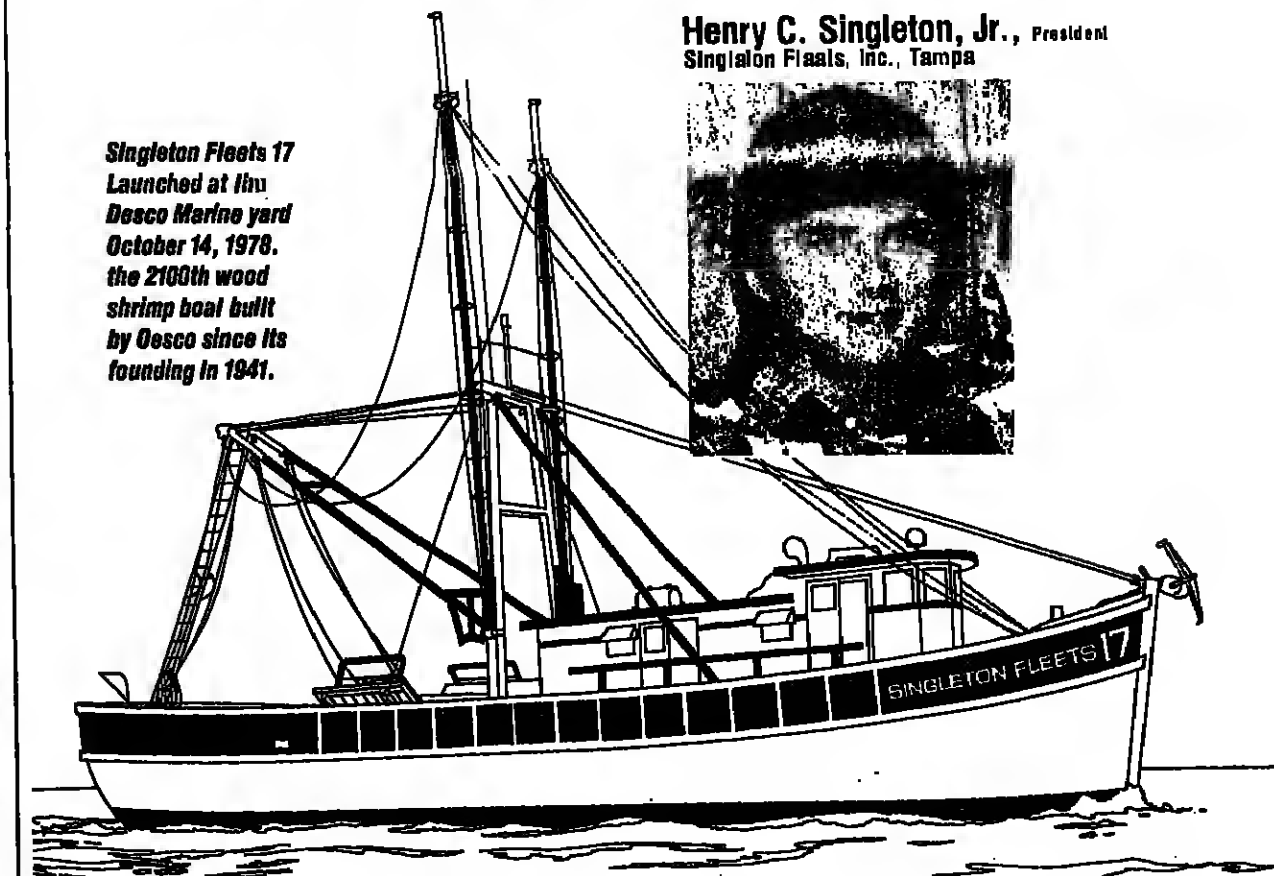
Delta already builds 38 and 42 ft small drum seiners and the 38 ft combination boat. It has recently developed a 50 ft seiner and a 27 ft gillnetter.

"MY BOATS HAVE GOT TO KEEP THEIR NETS WET AND DOWN TIME AT A MINIMUM. THAT'S WHY I'VE BOUGHT 12 DESCO'S AND HAVE 20 MORE ON ORDER"

Henry C. Singleton, Jr., President  
Singleton Fleets, Inc., Tampa



Singleton Fleets 17  
Launched at the  
Desco Marine yard  
October 14, 1978.  
The 2100th wood  
shrimp boat built  
by Desco since its  
founding in 1941.



Desco's standardized hull designs — modified and customized to meet any fishing needs — make savings possible in construction without sacrificing quality. Those savings are passed along to Desco customers. And there's more. The rugged dependability and easy maintenance of Desco boats keep on saving money. Some models are worth more after several years than what you paid for them originally. For fleet owners or managers like Henry C. Singleton, Jr., president of Singleton Fleets, Inc. of Tampa, Florida, Desco standardization cuts costs on replacement parts inventory, makes maintenance easier and less expensive, and promotes fleet productivity and profitability by helping keep the nets wet and down time at a minimum. And what works for fleet owners can work for you.

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For faster towing speed the Midwatertrawls are now made with 128 inch mesh (100mm half mesh) in the wings and 128 inch mesh in first section of belly. The big mesh or the ropes will also help with the jelly-fish problem. The nets are fitted with stainless steel combination ropes for better opening and more stability, and are easy to handle through the power block. This net is presently being used by Danish and Swedish vessels in the Kattegat and Skagerrak waters with great success. The net can be made either for pair or single boat trawling and will be ideal for herring, mackerel, sprat and blue whiting fishing.

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## PORTS &amp; MARKETS

## Project to help Co-ops

FISHING is a relatively small activity in the Central American state of Guatemala, accounting for only about three per cent of agricultural production. But there is growing interest in developing the potential of this industry, particularly as an export earner.

The government is to carry out a \$6.7 million project which will assist existing co-operatives at El Tamarindo, El Triunfo, La Libertad, Acajutla and La Unión.

Large scale activities are to be developed at La Unión where facilities for boat maintenance will be set up.

The Inter-American Development Bank is lending \$5.3 million towards the project, which will require cold stores, processing plants and landing wharves to help diversify the industry from its basic shrimp fishery.

Private enterprise is also taking part. Backed by a \$2 million loan, the company Multipesca SA is beginning a shrimp venture in 1979. Another company is planning an investment of \$6.5 and will be seeking all marketable types of fish.

## CATCH SOARS IN URUGUAY

**Fishing exports could soon challenge meat...**

WITH the encouragement of government incentives and boosted by foreign investors, the fishing industry in Uruguay is fast becoming a valuable source of foreign exchange for the country.

As recently as 1975, the catch was only 26,200 tons. By last year it had jumped to 48,300 tons and, in 1978, it is expected to be more than 65,000 tons. The medium-term target is a catch of around 200,000 tons by 1981. But some people feel this is too conservative and it may not be long before exports of fish match those of meat.

From only 7,474 tons in 1975, they jumped by 122 per cent to 17,669 tons in 1977. This year, an estimated 28,000 tons exported should earn around US \$5 million.

These exports presently consist almost entirely of frozen fish, much of it taken in the rich grounds of the Patagonian shelf. The main outlets are Brazil, the United States, and the EC countries.

Focus of the fast-growing industry is the port of La Paloma, 240 km from Montevideo. This is now in the initial \$6 million stages of a large development scheme. Two inner harbours, one being constructed and the other a port with the landing capacity and processing plants for a catch of around 100,000 tons.

Private investment in the industry amounts to about \$20 million. But this could rise soon to more than \$100 million. One project involves Dutch and other Western European investors. It will require about \$40 million and will include at least two deep-sea ships. Three other projects by local companies are estimated to be worth about \$60 million.

New fishing investments are automatically categorised as in the "national interest." This qualifies firms for exemption from taxes and charges on profits, all import charges, customs duties and port tariffs, and income and real estate taxes for up to the first ten years.

But ships working Uruguayan waters must be piloted by a Uruguayan captain and half the crew must be Uruguayan. Fleets consisting mainly of factory ships are discouraged.

## FRESH FISH SALES RISE

NORWEGIAN trade in fresh fish has been running well ahead of last year. Sales are expected to reach 200 million kroner (about £20 million) by the end of the year, 50 million up on 1977. Exports in 1977 totalled 13,000 tons worth 154 m kr.

Figures for the first half of 1978 show improvements all along the line. Cod exports rose by 200 per cent to 2,452 tons. And fresh mackerel exports doubled.

## Dogfish

Exports of fresh salmon jumped to 1,093 tons from 724 tons in January-June last year. But there were some declines. Dogfish fell by 221 tons to 379 tons and lobsters by 25 tons to 15 tons.

Prawn exports fell from 1,037 in 1977 to 1,037 in 1978 but this is largely due to a change in the way the catch is handled. Over the past year a number of Norwegian firms have installed processing plants.

## INDIA EXPORTS ON TARGET

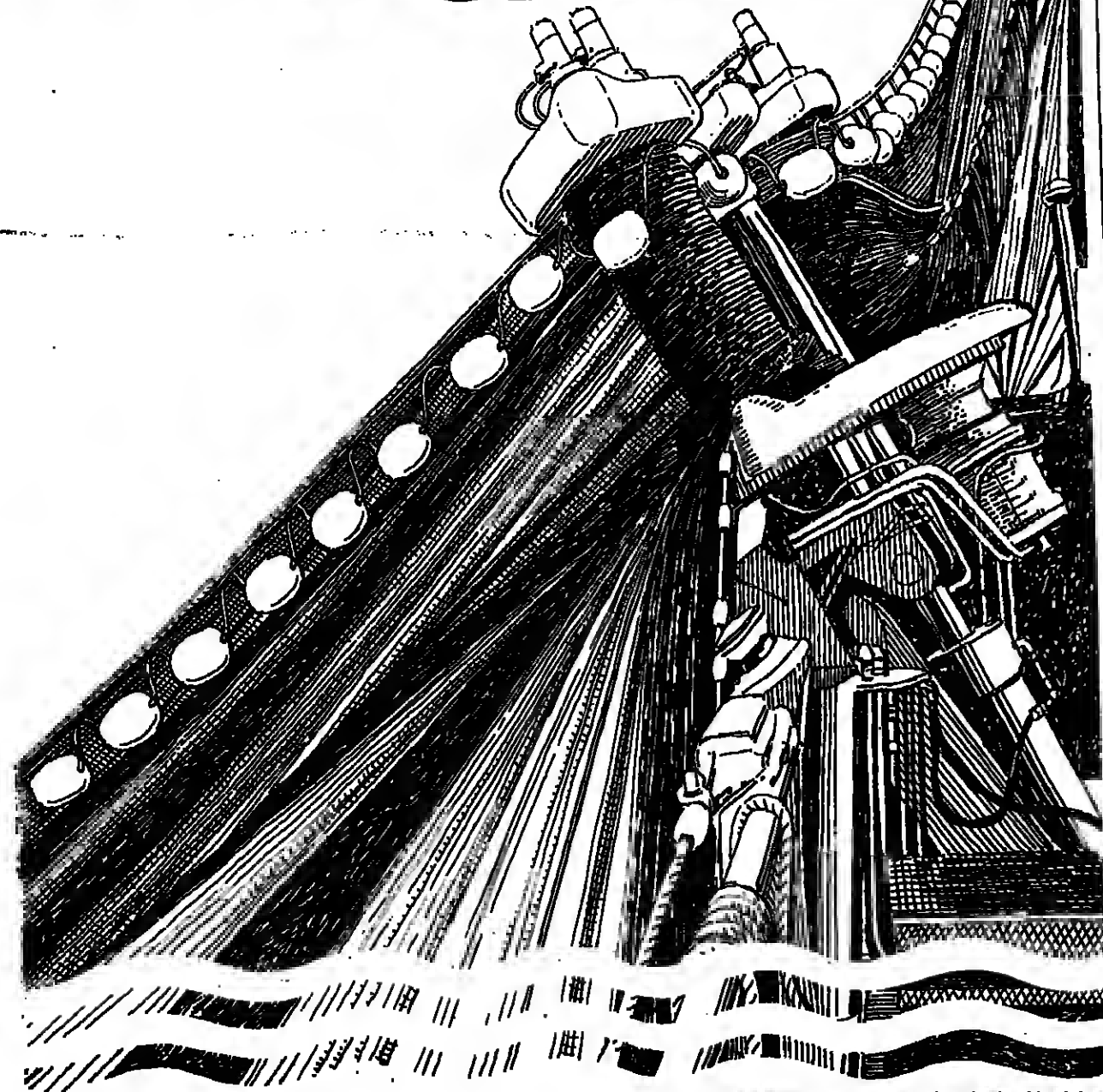
EXPORTS of sea products from India in the first four months (April-July) of the current fiscal year were 35 per cent higher in quantity and 18 per cent in value over exports in the corresponding months in 1977.

Exports in 1978 were 25,361 tons valued at Rs 88.4 (\$38.5 million) against 19,234 tons valued at Rs 61.2 (\$26.5 million) in 1977. The increase in this period was 31 per cent in quantity and 45 per cent in value. Although total export earnings were higher their unit value was lower.

The export target in 1978-79 is 73,780 tons and Rs 124.2 million (\$51.2 million) against export earnings of Rs 180.9 million in 1977-78 and Rs 189.2 million in 1976-77.

The fish catch rose to 2.54 million tons in 1977-78 compared with 2.4 million in 1976-77. The rise of 5.8 per cent was almost double that in 1976-77.

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Inside one of the bays at the new Phase II Store operated by Tempco Seaside at Willand, Devon.

## Cold stores doubled

ONE OF the facilities of the new Tempco Seaside cold store complex at the Willand Industrial Estate in Devon is a blast freezer able to handle mackerel from south-west England ports.

The £1.25 million Willand II project was opened in October by John Clement, chairman of Unigate Foods Ltd. It is a "mirror image" of the Willand I project opened in 1975 and brings the available cold store space up to 2.5 million cu ft.

The original concept was dairy oriented, but Willand II also houses fish landed in West Country ports.

## CANNERY IN BEIRA

THE European Economic Community is planning to assist in financing a fish cannery in Beira, Mozambique.

The factory is planned to produce 2,000 tons of canned fish, 1,800 tons of meal, 450 tons of oil and 100 tons of fish by-products. Total cost is estimated at the equivalent of US\$3.7 million.

## America seeks outlets after record harvest

UNITED STATES sea product value reached a record level in 1977 and National Marine Fisheries Service officials are reaching for greater shares of the world market for the fishing industry.

The value of fish and shellfish landed by US commercial fishermen was \$1,600 million. This represents an all-time high for producers.

The value of processed fishery products, edible and industrial, rose to \$3,900, an increase of 11 per cent over 1976.

Shrimp, tuna, crab, salmon and flounder accounted for the largest share of the increases.

## An award

As if this wasn't enough improvement, US fishery officials have awarded a \$400,000 contract to study the structure and trade barriers of foreign markets for seafoods not widely used by American consumers. The contract recipients, Earl Combs Inc. of Seattle, Washington, are studying those species abundant on US coasts.

The study steps up US efforts to improve the domestic fishing industry by developing new exports. Effort will be concentrated on 16 European and Far Eastern countries. Products of concern include squid, eels, and herring.

Specifically, the study hopes to identify export market structure, pricing mechanisms, trade barriers and potential areas.

The information will then be given to members of the US fishing industry which will provide guidance on when and how to move into international markets.

## TUNA TRADE

STARTING in 1979, the Maluku Perikani State Corporation in Indonesia will export tuna to Italy, the United States and Japan. Ir. Tambuna, director of the Corporation, said these countries had shown an interest in Maluku's fish because of its very good quality.

The Corporation operates a fleet of 20 vessels, which were acquired with World Bank aid and went into operation this year. They are expected to bring in a catch of about 5,200 tons of tuna a year.

To meet the rising demand for tuna, the Corporation is to build a special quay at the port of Maluku to accommodate foreign ships.

It will also have two carrier vessels built to collect fish from landing sites in the province and transport it to cold stores from where it will be shipped out to export markets.

## Sri Lanka exports

SRI LANKA'S frozen fish exports are on the increase, and one of the best new outlets is West Germany. In the first four months of 1978, fish exports there earned some DM250,000.

With fish getting scarcer and more expensive in Europe, supplies are being sought further afield.

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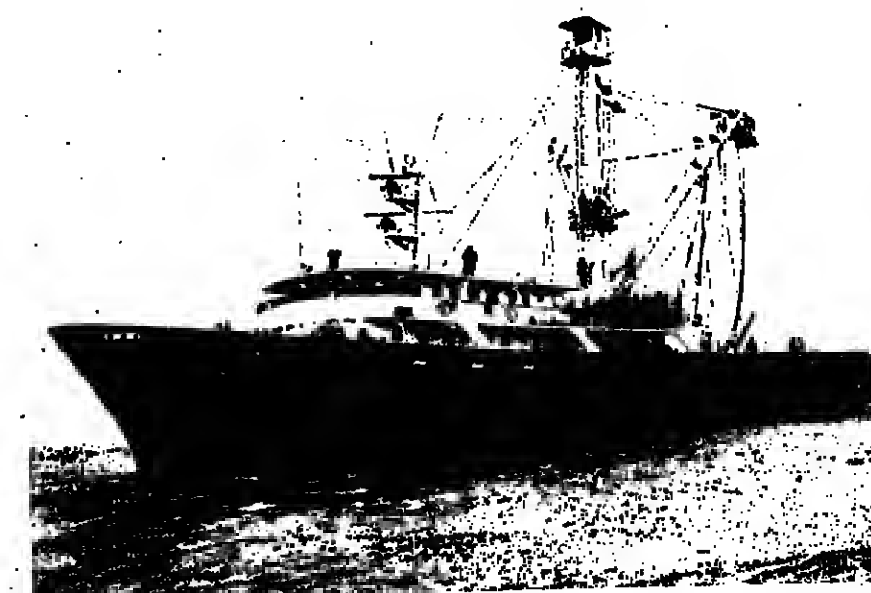
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## PORTS &amp; MARKETS

## Double-decker goes national...

AFTER a successful test launching in Scotland, the Findus double decker (a new bettered fish product), has now gone into national distribution throughout the United Kingdom.

The launch was backed by a £350,000 national television campaign running to the end of November, with a programme of advertising and promotions to follow.

The double decker consists of a layer of fish, topped with a layer of mashed potato and encased in batter.

It ranks with fish fingers as an economical and convenient meal and is particularly popular with children.

Before introducing this complicated product, Findus had to develop appropriate processing technology.

This took two years and the new production line is housed in the company's recently completed £1.5 million factory in Grimsby.

"Double deckers proved to be our most successful launch in Scotland ever," said Peter Tringham, Findus's new products manager, "and we see no reason why the product should not

be just as well received by the rest of the country."

At another level, Findus also announced "good news for cats," with an improved version of its product Pet Pax. Marketed under the Kayak brand, this offers minced cod (saith) in ball-in-bag form (instead of fillet blocks) in 200g and 400g sizes.

"We have for many years dominated the frozen sector of the £95 million cat foods market," says Findus.

With the new Pet Pax it expects to be better equipped to compete with canned and dried foods.

## JAPANESE BUY INTO THEIR SUPPLIERS

JAPAN IS SO eager to import fish products that her industry is investing in Canadian west coast processing plants in an attempt to corner the market. Some 17 processing plants now are partially foreign owned and these control about 10 per cent of British Columbia production. And foreign control is increasing.

Twelve of 60 processing plants and distributors in the province now are partially Japanese owned. Because Japan needs fish to feed its people, more Japanese nationals are investing in the Canadian industry.

Trevor Proverbs, a fisheries researcher, says in the past five years Japan has poured nearly \$21 million into British Columbia processing plants; and he estimates that loans to Canadian companies may amount to as much as \$40 million. The giant Japanese trading company, Maruhmi Corporation, has led the way with debenture purchases of nearly \$12 million.

Mr. Proverbs says the situation is not yet critical, but it must be watched. And Gerry Spitz, manager of the Fisheries Association of BC, does not feel there is "a panic situation." He says British Columbia processors value the Japanese as customers and he would not like to see over-reaction to their financial involvement in local companies.

## Corner

Mr. Proverbs feels that the Japanese investments are an attempt to corner the market rather than an attempt to reap financial dividends.

Much of the increased interest by Japanese firms in the BC market is the result of the lucrative herring roe fishery. In Japan, herring roe is a delicacy and Japanese buyers early in 1978 were outbidding each other so much that they pushed the prices up from about \$400 a ton to a high of \$1,100 a ton.

Because of the inflated

prices the Japanese were willing to pay for roe, the export of BC marine food products to Japan has jumped from \$25 million in 1974 to more than \$130 million in 1978.

Another catalyst which has caused the unprecedented Japanese interest in the Canadian fishery is the 200-mile coastal boundary limit which has barred Japanese fleets from fishing off the west coast of Canada.

Mr. Proverbs says that while Japanese financing does not give the investors legal control of the Canadian processing plants, the Canadian companies could become dependent on Japanese financing.

It is feared that the Japanese, with their strong financial backing, could gain control of the fishery and Canadians, unable to compete, could lose control of the resource.

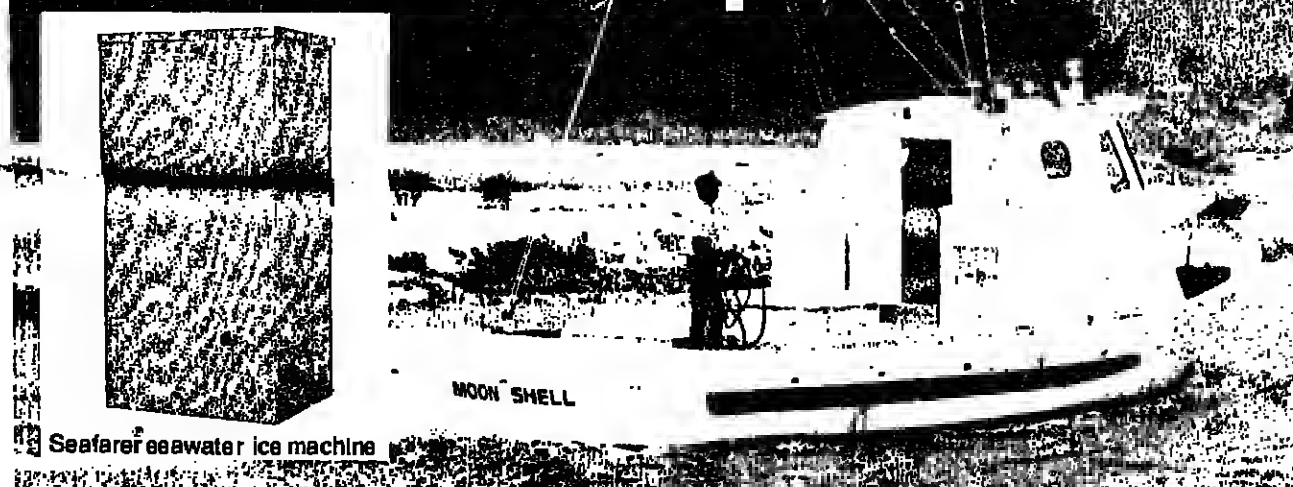
A negative result of Japanese investment is that some Canadian salmon now is being shipped frozen to Japan for processing, depriving Canadian shoreworkers of jobs.

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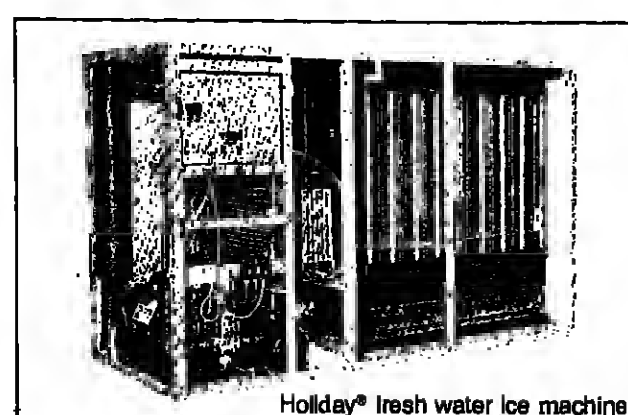
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Young helpers join in to remove small fish from a beach net in Sri Lanka

## Sri Lanka's project uses smaller fish

THE Fisheries Ministry of Sri Lanka is introducing a local substitute for imported Maldivian fish (dried and smoked) under a project funded by the Norwegian government.

This substitute has the nutrients found in wet fish and contains about 84 per cent protein. It will be known as Rasajewa. The government plans to set up three plants to produce it.

According to Fisheries Minister Festus Perera, the new product will open up more job opportunities, and it will utilize smaller fish such as the perchlet, pony fish and "herring" which are netted in abundance in Sri Lankan waters.

Another Norwegian-Sri Lanka project got under way in October when Mr. Perera opened a Cey-Nor model fish stall near the Fort Railway Station in Colombo.

Cey-Nor is a non-profit organisation set up with the assistance of a Norwegian youth association and the Norwegian government. As previously reported in *FNI*, it is engaged in building small boats and making gear. It also operates trawlers off the northern and eastern coasts outside the areas worked by local fishermen.

Besides offering fish at very reasonable prices, Cey-Nor will use the new stall to demonstrate hygienic handling of catches. Depending on the success of this initial venture, Cey-Nor hopes to open up sales outlets elsewhere in Colombo.

## Cold chains

THE Philippines Ministry of Natural Resources is setting up five store chains in strategic parts of the country in an effort to cut down wastage of fish through lack of the means to preserve catches.

Records indicate that the country is losing about five percent of its yearly catch from waste caused by shortage of cold stores. This amounts to a loss of some 80,000 tons.

Natural Resources Minister Jose Laido Jr.

• DIRECTOR of the Bureau of Fisheries and Aquatic Resources in the Philippines has said that fish production in 1978 should amount to about 1,570,000 tons. This, he added, will be only about 10,000 tons below estimated effective demand for fish, which means the country is now close to self-sufficiency.

Demand for fish has been rising at the rate of about 5.5 per cent a year. But there is a continuous effort to keep the rise in domestic production ahead of this demand.

About 1.5 million Filipinos are estimated to be directly employed in the fishing industry, and even more earn a living from fish-related activities such as canning and drying.

## Prawn problem...

FINOTRO and Havvoysund Fishermen's Co-operative is buying 600 tons of frozen pink shrimp in Murmansk to keep business going until Norwegian prawn fishermen get started again in the 1979 season beginning in April.

The Norwegian shrimp trawler fleet has little on-board freezing capacity, which is the first requirement for continuous processing in the winter months. But previous experience with Russian frozen prawns has not always been the best, according to a spokesman for the Fisheries Directorate.

## Birds Eye launch

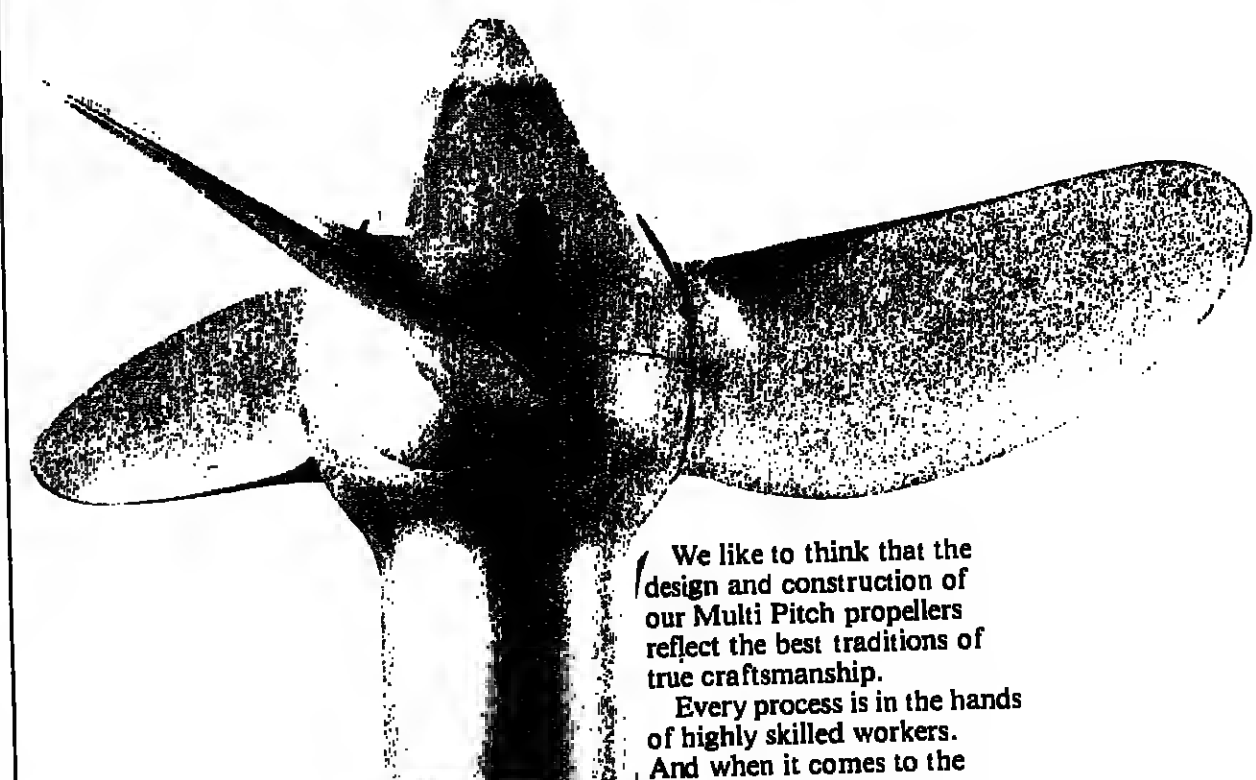
BIRDS EYE FOODS, Britain's largest frozen fish producer, is putting its considerable weight behind the effort to promote the lesser-used species with a test marketing of hake and coley (saith) steaks.

The test is being carried out in the north of England. The new products, which are being launched in 7oz packs, have suggested selling prices of 46p for hake and 44p for coley.

The launch of hake and coley steaks follows on from the recent national launch of kippered mackerel.

"Although hake and coley are very similar in appearance to cod," says Birds Eye, "they appeal particularly to those consumers who like a slightly stronger taste than the traditional cod and haddock."

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# CHEMICALS FROM KELP

**GIANT KELP** (*Macrocystis pyrifera*) is the largest and fastest-growing marine plant in the world. Under ideal conditions, it can grow more than two feet (0.656 metres) a day.

Culifornian kelp plants may measure up to 200 ft (61m) in length. A kelp bed will then have formed a thick canopy on the surface. Throughout the natural cycle of a kelp forest, mature strands will continually die and break away from the plant, giving way to new fronds shooting up from the holdfast. Under normal conditions, a kelp forest completely regenerates itself in this manner about twice a year.

But man now assists the regeneration process. In particular, marine "mowing machines" owned and operated by the Kelco Corporation of San Diego regularly visit the kelp beds. This process, if anything, improves regeneration by

efficiently removing the mature strands.

The interest of the Kelco Corporation in kelp is the algin that it contains in uniquely large quantities. Algin, a colloidal substance, has the property of absorbing large quantities of water. When a tablespoonful of algin is dissolved in a quart, the water becomes as thick as honey and can hardly be poured.

## Crystals

This property makes algin important to a number of industries. When a teaspoonful is added to a gallon of ice cream, it prevents the water from forming coarse ice crystals.

Algin also has unique suspending, stabilising, emulsifying, gel-producing, film-forming and colloidal properties which render it valuable in other processes. Because of its suspending properties, it is used in pharmaceuticals to suspend drugs and antibiotics.

It is also used in car polish to keep the abrasive in suspension. It is added to paints to suspend the pigments and to give a uniform product which can be applied to a surface without showing brush marks.

Kelp's colloidal properties are particularly important in the preparation of adhesives for containers, coatings for welding rods, and to hold fibreglass mats together. These mats are used in storage batteries as plate separators. Rubber companies use algin in processing natural and synthetic rubber latex where it acts as a creaming, thickening and stabilising agent.

Textile manufacturers utilise the thickening and stabilising properties of algin when they apply dyes in the printing of cloth. The algin prevents the dyes from running like a drop of ink.

Kelp's need for sunlight makes for slower growth as one travels north towards foggy San Francisco. The most prolific kelp beds are found

stretching south from Monterey into Mexican water off Baja California. The Mexican kelp beds are harvested by a local operator using a Kelco-designed harvesting vessel whose "crop" is processed by Kelco.

## Harvesters

Kelp harvesters are giant, sea-going lawnmowers. By regulation, the kelp is cut out only three to four feet below the surface to facilitate quick regeneration. The master of the barge-like harvester systematically moves back and forth over the designated harvesting area — the large cutting racks at the rear of the vessel deposit the kelp into the hold.

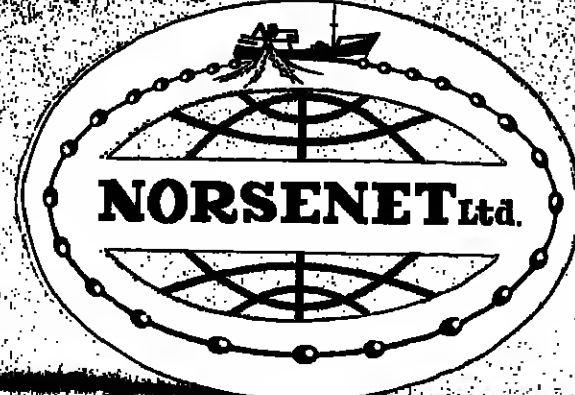
Regulatory powers exercised by the California Department of Fish and Game extend to the issue of licences to harvest the various beds to the various operators (Kelco is dominant but it has its rivals, notably the Stanfer Corporation).

In 1962, the California Institute of Technology, aided by a Kelco grant, initiated the Kelp Habitat Improvement Project. This project, still in operation, helped identify the role of the sea urchin in the deterioration of the beds, and has developed techniques for establishing new beds and restoring those which have been depleted. In addition,

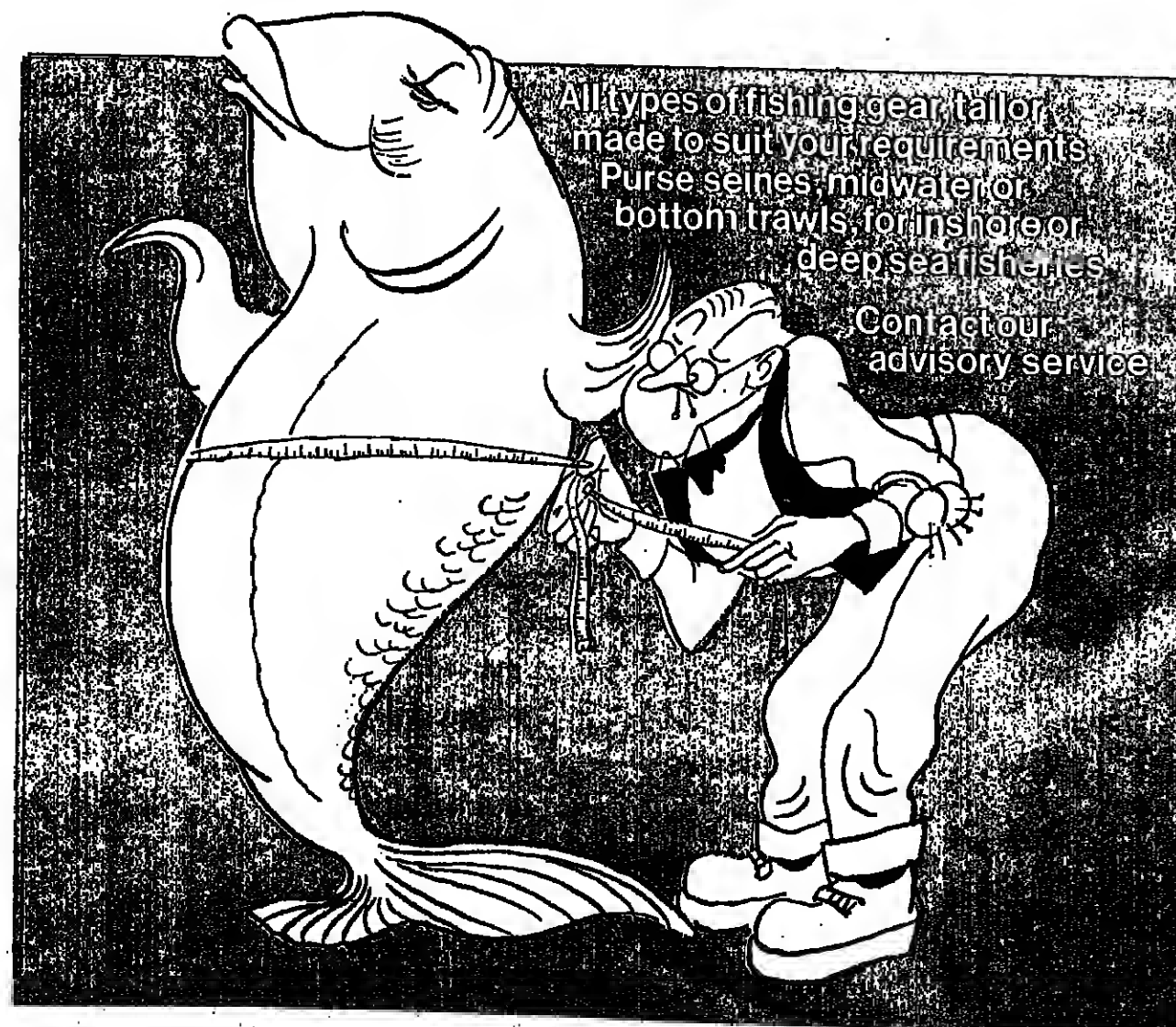
experiments are being conducted to find a type of kelp that can grow in warmer

Kelco itself has organised its own Kelp Habitat Improvement Department which works closely with the California Department of Fish and Game, the Scripps Institution of Oceanography, and the California Institute of Technology.

The seas fastest grower cropped like grass in a field



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## Some herrings do not mix

**NEW INFORMATION** on the genetic structure of populations of Pacific herrings has been revealed in a co-operative investigation between two divisions of the North-west and Alaska Center of the US National Marine Fisheries Service.

Reporting on the work, the Center says the Pacific herring is a valuable commercial resource as well as a crucial link in the food chain between planktonic populations and large carnivorous organisms. Understanding the genetic structure of herring populations is an important aspect of their management.

The work is being done by Dr. Fred Utter of the Center's Environmental Conservation Division, with the support of the Resource Ecology and Fisheries Management Division. The data were obtained by starch gel electrophoresis, with Stewart Grant as the principal investigator.

A previously unknown major group of Pacific herring populations in the Bering Sea has been identified by comparing two distinct populations from this area with a collection of herring from Puget Sound. An earlier genetic survey had indicated very little differentiation among populations ranging from off Oregon northward to Kodiak Island waters in Alaska.

## Some interbreeding

This absence of genetic differentiation among stocks of the North Pacific Ocean and the Gulf of Alaska was presumed to be the result of some degree of interbreeding among different stocks of these regions.

"Before the examination of the Bering Sea collections," said the Center, "there was no reason to suspect that a similar degree of genetic interbreeding did not exist throughout the northern distribution of herring. The present findings, coupled with previous observations, indicate that a barrier to gene exchange of long duration (probably thousands of years) exists between populations of the Gulf of Alaska and the Bering Sea. Some degree of isolation among the two groups of herring was also indicated."

"These studies indicate that a thorough examination of the genetic structure of Pacific herring is warranted since two distinct populations from adjacent regions (the Gulf of Alaska and Bering Sea) have now been identified. Also, present technology justifies additional investigations of sub-populations within both regions because the known number of genetic variations has more than doubled since this species was last surveyed six years ago."

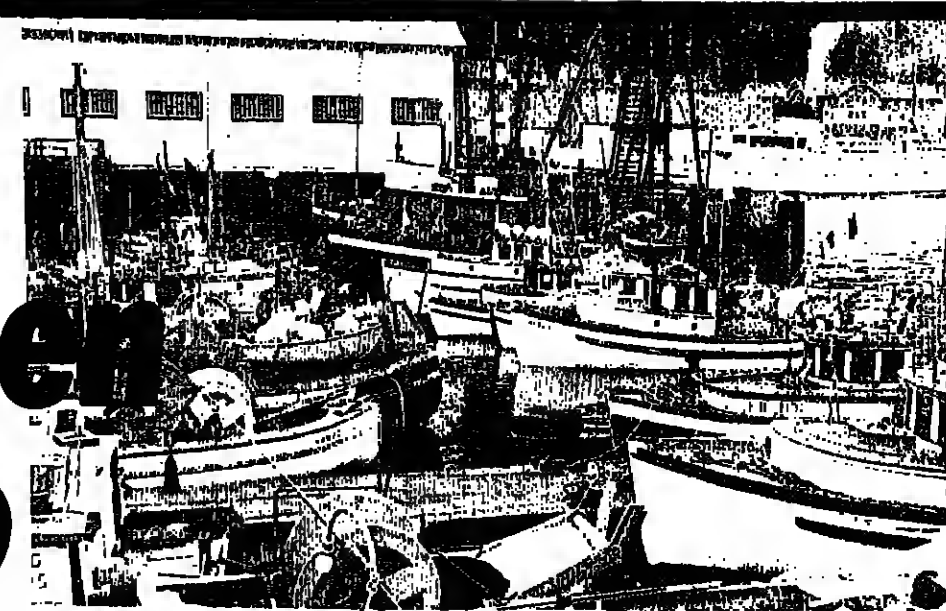
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# Salmon fishermen pay too little



Someone is paying. Salmon boats alongside a processing plant in British Columbia.

## LES RIMES reports on a problem in British Columbia

**BECAUSE** of the low licence fees paid by salmon fishermen on Canada's west coast, the taxpayer is subsidising the industry by millions of dollars a year, according to Dennis Cauvin, a federal government fisheries officer.

This year the cost of running the Pacific region of the fisheries department will be about \$36 million, with an additional \$20 million added for the new salmon enhancement programme, for an overall total of \$56 million. Only \$2 million is returned in licence fees.

The 11,000 licensed fishermen hauled in \$168 million in fish which gave them an average of \$15,270 each. On top of that, some

fishermen, who earned as high as \$50,000 a year, work only three months of the year.

Mr. Cauvin feels that licence fees should be increased drastically. He says the big profits taken by the fishermen have enabled some of them to buy larger boats — in an industry which already has too many boats seeking out too few fish.

Under a new programme which came into effect several years ago, the number of boats in the fleet was not to be enlarged, due to the fact there already were too many boats. But under the programme, a fisherman could replace his existing boat with a new one (as long as the old boat was no longer used for fishing).

What happened was this: some 76

vessels, with a carrying capacity of 186 tons, were removed from the fleet to be replaced by 76 new vessels — with a carrying capacity of 596 tons! That loophole in the programme has since been plugged, but it is an indication that the fishermen are making enough money to consider bigger vessels.

In a symposium held in Powell River recently, Mr. Cauvin reported that during 1973-74 the cost of fisheries management and research in Canada as a whole totalled about \$152 million. In return, the government gained about \$5 million from licences and other fees paid by fishermen.

He argued that the statistics clearly indicate that someone is being subsidised.

## '78 fish meal award...

**THE 1978** research award of the Association of Fish Meal Manufacturers has been won by Dr. E. R. Orskov of the Rowett Research Institute, Aberdeen.

Given for outstanding work in animal nutrition, the award consists of an inscribed silver trophy and a cheque for £150. In addition, a donation of £100 will be made for books for the Institute library.

The presentation was made at a luncheon in London.

This is the 21st award and the sixth occasion that it has gone to a research worker in the Rowett Institute. The topic was Recent Advances in Knowledge of the Protein Requirements of Ruminants.

He was talking to the crew of the Ceylon Fisheries Corporation trawler *Negombo* when the vessel called at Mutwal fishery harbour to land a catch of 95 tons.

The Minister said it was an historic occasion for the Corporation for one of its vessels to bring such a large catch. The crew had spent 18 days at sea and a special bonus would be paid to them.

He added that, under a new incentive bonus scheme which he had introduced, some employees had received payments of Rs2,000 and Rs3,000 (about £65 and £100).

The catch landed by the *Negombo* was worth about Rs500,000 (about £16,000).

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## BANGLADESH

# The co-op that's chosen its members

MOST DEVELOPING countries have tried to organise their working masses into co-operatives in the hope of speeding up development but, in the main, with little success.

The reasons for failure are many — the impoverished state of the workers, their low level of technical skill, their high level of illiteracy, their lack of leadership in their own ranks, the organisation of co-operatives by governments and their administration and management by civil servants without experience in business and industry. In addition, there is usually an inadequate supply of materials and equipment and the ever present insidious undermining influence of political interference and corruption.

Yet, despite these handicaps, some co-operative efforts succeed — perhaps about one in ten. One such fishermen's co-operative I came across in Bangladesh is supported by the Christian Commission for Development in

that country, financed by the World Council of Churches.

The manager of the project told me they had invested US\$1,761,722 in the organisation which is centred on the Mohashkhali district. Before the Commission attempted to set up the co-operative, they carried out a survey of more than 5,000 fishermen in

by  
**CEDRIC  
DAY**

Mohashkhali and neighbouring fishing communities. On the basis of that survey, they selected 1,132 men for membership and formed them into ten co-operatives. The men were selected because the survey indicated they had the character, intelligence and will to work with others and also had a potential for leadership.

## Taught

"We first taught them to read and write and to develop a social consciousness," the manager explained. "We encouraged their sense of community and personal responsibility. Then we went on to instruct them how to form a co-operative and trained them in the practical work of management, how to keep records and accounts, how to conduct meetings and handle the various kinds of problems that arise in any such society."

The men were also trained in modern fishing methods and to handle and operate mechanised boats. When they reached a required state of skill and competence, they were provided with boats and gear. So far about 100 boats of 42 ft overall equipped with 24 hp engines and modern fishing gear have been provided.

## Staffed

"Members of a co-operative were able to buy the boats for 60,000 takas (about £2,000) through a repayment scheme," the manager said. "Of this, 45,000 takas are put into a revolving fund while 15,000 are set aside for administration costs."

"They are also landing more fish," the manager added. "Besides the extra fish now used for domestic consumption, an extra 2,000 tons have been landed, earning some 10,000,000 takas."

## CATCH TARGET

FISH PRODUCTION in Bangladesh is estimated to be around 600,000 tons a year, and it hoped to raise this to around three million tons.

Fisheries and Livestock Minister K. M. Obaidur Rahman said recently that the government was working out a five-year plan with this as its eventual aim. Present domestic demand for fish is about 1.2 million tons a year.

According to the Minister, all water areas in the country would be brought under the integrated management of his ministry.

## Livelihood

Fisheries, including aquaculture, contribute about five per cent to the country's gross domestic product and provide a livelihood for eight per cent of the population.

In the current two-year plan (1978-1980), the target is to raise inland fish production about five per cent, from 622,000 to 653,000 tons and marine fish production from 95,000 to 155,000 tons.

To achieve the marine target, the number of trawlers will have to be increased from 18 in 1976/77 to 45 and mechanised boats from 900 to 2,350.

Meanwhile, a central workshop for maintenance and repairs has been set up and staffed with trained mechanics. The workshop keeps all engines and boats of co-operative members in good repair and also services about 30 per cent of all fishing boats in the district. A central supply of twine and floats is also available for the co-operatives.

The results of this enterprise to date are encouraging, the manager told me. The repayments made by the fishermen are ten per cent or higher than those usually received by such co-operatives and the earnings of the fishermen have risen from about 1.5 takas (0.50p) a day to 60 (£2) or more.

## Freed

Also, the socio-economic impact has been considerable. Not only have the fishermen freed themselves from the clutches of moneylenders, but they have developed as community leaders. They now have new clothes and medical equipment.

They now have new clothes and medical care and some have adopted family planning and their children are going to the schools which have been started.

"They are also landing more fish," the manager added. "Besides the extra fish now used for domestic consumption, an extra 2,000 tons have been landed, earning some 10,000,000 takas."

# BANK BACKS A GIANT PROJECT

ECUADOR

THE Inter-American Development Bank has approved a loan of US\$8.3 million to help finance a fishery development project in Ecuador.

Empresa Pesquera Nacional (EPNA), a state agency under the Ministry of Natural Resources, will use the loan for various projects. These will include development of sea fishing at various sites along the coast. There, docking and landing facilities will be constructed, and equipment will be provided for the handling of the fish brought ashore. Distribution channels will also be improved.

Participating in the financing of the project is the International Fund for Agricultural Development which will provide resources

totaling \$5.8 million, mainly for acquiring equipment.

Total cost of the project will be nearly \$18 million. It will include the following:

1. The formation of a fleet made up of some 20 boats around 40 ft (12.2 metres) long, five of 65 ft (19.8 m), and about 100 launches of 30 ft (9.15 m) equipped with gear for small-scale fishing.

2. Construction of docking facilities at the fishing sites of Puerto Bolívar, Puerto Lopez, Santa Rosa and Esmeraldas. Small sheds will be built to house ice-making and refrigeration plant at these places.

3. Processing buildings for frozen fish at Mantá, Esmeraldas and Guayaquil.

4. Two markets, in Quito and Guayaquil, to store and distribute fish products.

The fishery sites will be equipped with ice-making machinery and refrigerated storage rooms. Processing facilities and the two markets will also be equipped with freezing plant.

Also included in the project is the purchase of refrigerated trucks and vans, plus show cases and/or freezers.

The project will include programmes for training skippers, engineers and mechanics to operate the new vessels. It will also provide for a publicity campaign to help boost fish consumption, and a study for the promotion of co-operatives at fishing sites.

Under an advisory service programme linked to the project, international experts will co-operate with the executing agency in the operational phases.

"Execution of the project," says the Inter-American Development Bank, "will enable the fishery sector to increase its catch of under-exploited species of fish, increase the supply to the domestic market of high-quality fish products, improve the family income of artisan fishermen, regulate product supply and provide new employment opportunities."

The Bank loan will cover 46.6 per cent of the cost, the International Fund for Agricultural Development 32.6 per cent, and 20.8 per cent will come from local sources.

## Britain funds resource study

THE British Ministry of Overseas Development is to spend £1.1 million on a study of fisheries resources and fish processing and utilisation in Ecuador. This aid will include an advisory team of experts, short-term consultants, provision of equipment and the training of Ecuadorian staff in the United Kingdom.

"While the fisheries industry in Ecuador is of considerable commercial value," says the ODM, "there is a lack of information on the long-term potential of fish stocks. The national fish catch quadrupled between 1973-1977, though the present level of the catch may already exceed that desirable if the industry is to be maintained over a long-term period."

"It is therefore vital for the study to establish the optimum size of the catch which can be sustained year by year."

"Depending upon the outcome of this study, there may be an increased need to find new sources of fish including shrimp and trout, possibly through fish culture. The project will also be concerned with the marketing of fish as well as the identification of new, cheap fish products aimed at the poorer sectors of the community."

## A welcome for joint ventures

JOSE LEIDO Jr., Minister of Natural Resources in the Philippines, said recently that his country was prepared to enter into joint venture projects under a firm framework of policies and incentives.

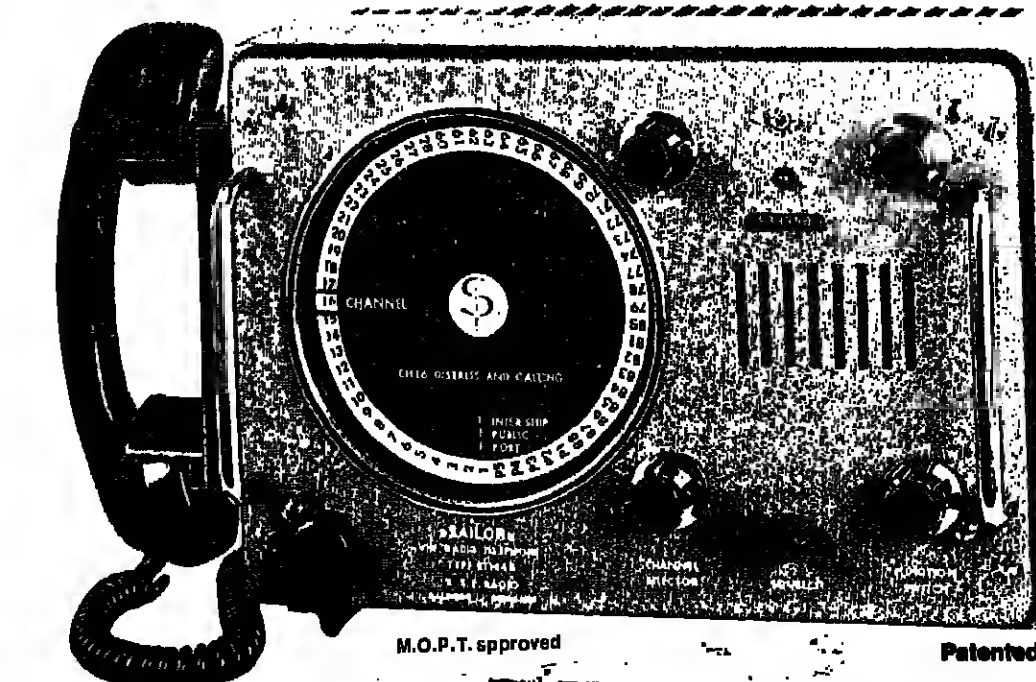
During a meeting called to discuss joint fishery ventures with other countries, the Fishery Industry Development Council set out proposed policies and implementing measures.

## S. P. SAILOR GENERAL AGENTS:

AUSTRIA: E. S. Radio & Co. Pty. Ltd. P.O. Box 82, 73 Wilton Street, Auckland N.Z. Phone 439-3333  
AUSTRIA: TEPAG Handelskreditanstalt, Rindlgasse 18, Wien 1120, Austria. Phone 0222-83337, 830110  
BELGIUM: Answert Marine Radio Company N.V., 2000 Antwerpen. Phone 031-137780, 36092, 310487  
CANADA: Sales Communications Limited, 4000 Highway 204, Quebec. Phone 514-721-6123  
CHILE: Equipos Industriales S.A.C.I. Maipo, 812 OF 912, Santiago. Phone 71800, 502942  
CYPRUS: A.P. Harkitopoulou, 60, Bessie Offshore Services Limited, 4, Chrysomaras Street, Limassol  
FINLAND: S.H. Jakobsen Radiohobby, Thorshavn. Phone 11281 & 11282  
FINLAND: Oy Helander AB, 2000 Helsinki, P.O. Box 180. Phone 07021  
FRANCE: J. M. Frenet S.A., 25000 Nanterre. Phone 208-88-96. Compagnie Radio-Maritime C.R.M. 8 Rue Lavoisier. 75008 Paris. Phone 265-78 81.  
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HONG KONG: Gimhan & Co. Ltd., 178 Gloucester Road, Wanchai. Phone 5 728168  
ICELAND: Radiohobby Ltd., Reykjavik. Phone 23173  
IRELAND: The Cork Inn & Restaurant Ltd., Cork. Phone 10211 20793  
ITALY: Celeronare S.A.S. 18146 Genova. Phone 10101 36908/303188  
THE IVORY COAST: Compagnie Radio-Maritime, Abidjan. Phone 38877  
KENYA: Mima Electric B. Cyrencom Engineering, Mombasa. Phone 21064. After hours 71228-20890  
MALTA: Maritima Ltd., Gela. Phone 30821  
MOROCCO: SCRM Equipement Radio Maritime, Casablanca. Phone 882 62 & 772 67  
NORWAY: Telenor AS, 1364 Gjøttum. Phone 021 841180  
PORTUGAL: Mendes Da Almeida S.A.L. Lisbon. Phone 087794-967710 867788  
SINGAPORE: Radio Holland B.V., Hagemeyer Annex Block 900, Orchard Rd., 11 km. P.O. Box 4050, Bukit Timah, Singapore 21. Phone 67144  
SOUTH AFRICA: Marconi Marine (South Africa) Pty Ltd, Cape Town 8001. Phone 46 3301  
SPAIN: PCP Electrónica Aplicada S.A., Caya-29, Madrid-1. Phone 4014458  
SWEDEN: Televerket, Radioteknikskontoret, 42102 Vänersborg 2. Phone 031/480000 - Svenska Televerket AB, 17118 Solna  
TUNISIA: Compagnie Tunisienne d'Electronique Tunis. Phone 283698 - 283407 - 283972  
TURKEY: Hika & Gulru, P. 604, Karakoy, Istanbul. Phone 443739-Head Office 476221-Workshop Branch 124 hours service  
UNITED ARAB EMIRATES: Broom International, P.O. Box 1788, Dubai. Phone 32236  
UNITED KINGDOM: S. P. Radio (U.K.) Ltd, 88, Park Lane, Croydon, Chs. 2KT. Phone 01 686 0261  
USA: Real Marine Supply, 1820 N.E. 148th St., North Miami, Florida 33181. Phone 305-846 4254-4  
VENEZUELA: General Pdr. Nautica, Caracas. Phone 312117 & 314030

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has an output of 25 Watt. If you are in distress, the coast stations and the professional navigators will be listening day and night on channel 18. You can call-up your home via the coast stations and the telephone network.

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to the fact that S.P. RADIO has developed a new simple programming system, which saves a lot of electronics - and also results in greater reliability. The set is normally delivered programmed for all international channels, total 55, but it can without any other tools than a screwdriver be programmed so that practically any special request can be complied with (also land-based stations).

Examples of programming: All private and meteorological channels used in the marine VHF-band. Frequency ranges for both transmitter and receiver 155.000-158.000 MHz and 156.000-163.000 MHz. The simplex channels 75 and 76 with reduced output, when these are released by the authorities. A switch can be mounted on the front panel, which allows selection of international or U.S. frequency standard (A-channels). Blocking of receiver

and/or transmitter on any channel. The set can be programmed, so that for one or more channels an external information is submitted, e.g. for the blocking of extra receiver (river traffic). Automatically reduced transmitter output on any selected channel.

SAILOR marine radio has been approved and is sold in more than 40 countries.

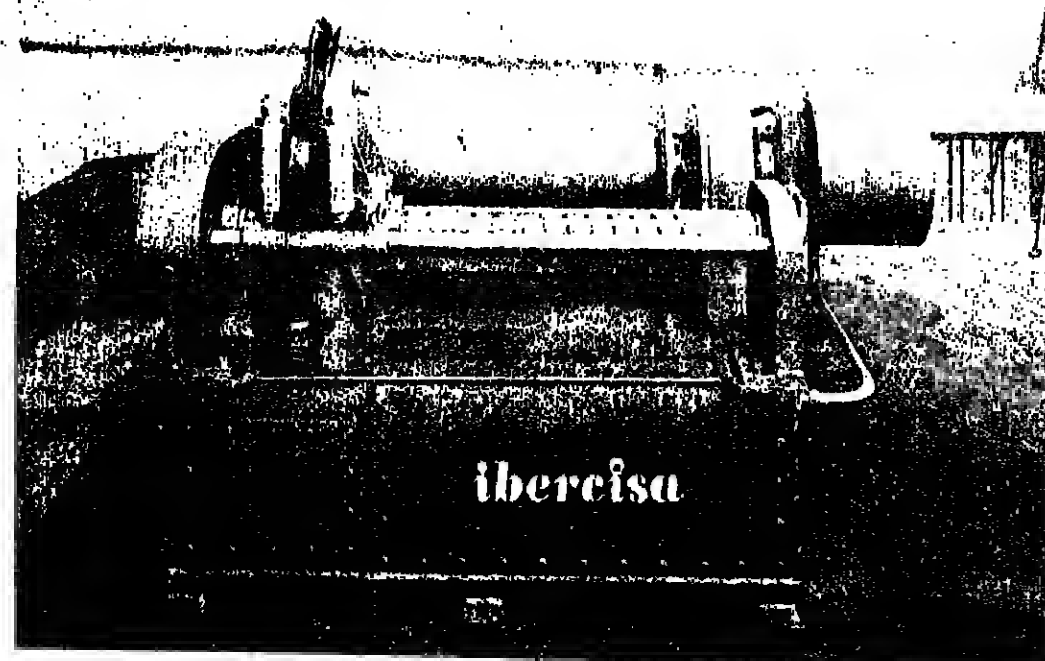
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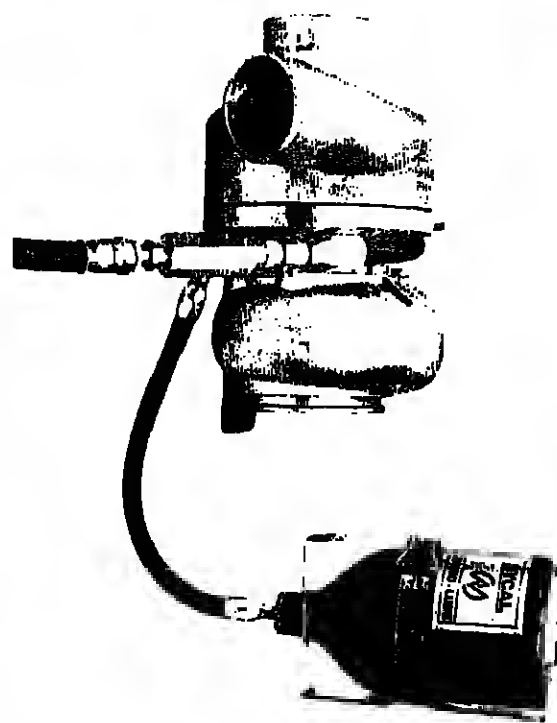


## FIAT DIESELS

AIFO, the marine branch of the giant Fiat Motor Company, has introduced two new diesel engines and has reached agreement with Ford in the United States to sell certain of their diesels there. The agreement covers the 95-165 and 280 hp models.

The 280 hp is a development of the current 240 hp engine. The improved version is still under development and will have the type number 836ISM when it is introduced.

Now available in a marine version is a four cylinder 72 hp diesel which is used in Fiat cars. The lightweight high-speed engine is unusual in having an overhead camshaft. This is driven by a toothed belt from the crankshaft. ● Further information from AIFO s.p.a., 20123 Milan, Via Carducci 29, Italy.



A feed hose from the Nycal Turbo-Lube lubricant reservoir ties into the turbocharger's main oil supply hose through a check valve.

## U.S. lubrication system for turbo chargers

A "UNIQUE" lubrication system claimed to give double protection to diesel engine turbochargers has been developed by The Nycal Company in the USA.

The Nycal "Turbo-Lube" becomes a com-

ponent of the engine's turbocharger, designed to prevent the most common and serious turbocharger problems.

An oil starved turbocharger can suffer bearing and seal failure in just a few seconds. This oil lag can also cause wheel rub and shaft damage.

The Nycal Turbo-Lube is a stand-by lubrication system consisting of a lubricant reservoir and a check valve tied into the turbocharger's main supply hose. It goes into operation automatically as engine oil pressure declines.

"Completely self-pressurising," says Nycal, "it provides immediate oil flow at hot engine shut down, thereby preventing bearings and seals

still rotating from running dry and suffering damage.

"At cold engine start before engine pressure can be built up, the Nycal "Turbo-Lube" provides immediate lubrication from the oil retained in the main oil line.

"By automatically correcting the lubrication lag at hot shut down and at cold engine start, the Turbo-Lube prevents damage caused by oil starvation and the resulting premature turbo breakdown. This system in effect extends the life of the turbocharger."

The system can be installed in about 30 minutes. ● Detailed information and specifications from The Nycal Company, 240 South Main Street, South Hackensack, New Jersey, 07606, USA. Telex 134497.

## THREE MORE IN SLANZI RANGE



A new diesel from the Slanzi range.

THE MAKERS of the Italian Slanzi engines have introduced three new air-cooled diesels to supplement a range which now extends from 7.5 to 48 hp. The new engines are one, two and three cylinder models which fill in gaps in the range.

They are built on a modular basis with a common cylinder capacity of 511 cc, producing engines of 8, 17 and 25 hp. These engines come fully equipped for installation into a boat with the minimum of connections. The fuel tank is integral with the engine and only the exhaust and propeller

shaft have to be connected up. The engines can be equipped with a reverse reduction gearbox with a clutch or with a reduction gear and clutch only. A variety of optional extras are available including hand starting or electric starting on all models. Stern gear to match the engines can be supplied.

These specially developed marine engines are suitable for a wide variety of small work and fishing boats.

● Further information from S. Lauzi s.p.a., 42017 Novellara (RE), Italy.

## Twins synchroniser

A NEW engine synchroniser indicates when twin engines are not running at the same speed and also which is fast or slow. The compact unit is designed for installation close to the engine controls.

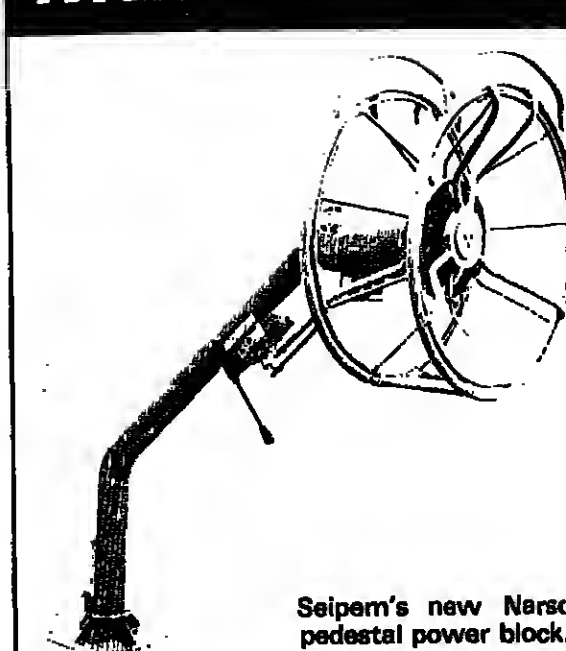
Three indicator lights are used. The centre one lights when the engines are synchronised, while the lights on either side show which engine is running fast. The unit works from a 12-volt supply and is good for 4, 6- or 8-cylinder engines. The indicators can be surface or panel mounted.

● Further information from Rockford Marine Enterprises, Rockford House, Rockford Way, Frinton-on-Sea, Essex, CO13 0AZ, England.

## product news

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## ITALIAN JOB



Seipem's new Nersio pedestal power block.

SEIPEM, an Italian firm which specialises in hydraulic fishing boat equipment, has added to its range of products. Its Nersio power block is now available in a pedestal mounted form with fixed block. This lightweight unit is designed for the small fishing boat and has a pull of 500 kilos.

Also new to the range is a line hauler, again pedestal mounted. This has a maximum pull of 100 kilos and a maximum speed of 90 metres per minute. Power comes from an engine-driven pump and both units are designed for simple installation.

## Steering gear

Seipem also makes steering gear and has produced a power steering unit for vessels up to 50 metres long. The actuating mechanism consists of double hydraulic rams in a compact unit. The rams are made from stainless steel and the unit can be mounted outside if required. Power is supplied from an engine-driven pump.

● Further information from Seipem, Ing. Giorgio Briotti & C s.r.l., Via Bartolomeo Parodi, 26-266, 16010 Ceranesi — Genova, Italy.

## Nine new freezers

THE ITALIAN company Ercole Marelli has introduced a new range of refrigeration machinery for shipboard use. The range covers nine sizes from 50 to 300 hp. The units are all powered electrically.

Each is available for either 220 or 380 volts AC. On the larger units twin motors are used. The units are compact in design with the motor and its belt-driven compressor mounted above the condenser. Raw sea water taken from a separate supply is used in the condenser. Two types of evaporator are available. One is centrally positioned and a fan directs cold air to the required compartments via trunking, the other utilises a separate evaporator in each compartment with a fan to circulate the cold air.

● Further information from Ercole Marelli & C s.p.a., Via Borgonuovo 24, 20121 Milan, Italy.

## Aerospace method in new rudder control

DOWTY has developed a steer-by-wire hydraulic control system for marine applications.

Based on a development for the aerospace industry, the new control system derives its electrical command signals from an onboard computer or autopilot, or a manually controlled stick.

These signals drive hydraulic actuators which move

the thruster or rudder control gear to the required position so that the vessel maintains the selected heading or fixed position regardless of sea state.

The equipment, supplied by Dowty Boulton Paul at Wolverhampton, England, consists of an hydraulic power pack driving the actuators, through electro-hydraulic control valves electrically signalled by servo amplifiers.

## Pots last longer...

LOBSTER POTS, which were being heavily corroded by the sea, have been given a longer lease of life through a plastic coating marketed by the Manchester-based Mallatite Plastics Ltd.

Mr. Tony Baley, a partner in Southern Shellfish, at Poole, in southern England, coats the pots, which are left in the sea all year round, with a low density black polythene, so they now last up to five

years — double their previous life.

The pots — 24, 27 or 30 inches in diameter — are made of 6 mm steel which is welded to form a frame, dipped in the polythene and covered in net. Bottom, middle and top bars of the frame are covered in rubber to protect the plastic and prevent chafing.

"Although Southern Shellfish offers pots with or without the coating, all fishermen ask for it and some fishermen, who make their own pots, bring them in especially for coating," says Mallatite.

## COATING FOR GRP VESSELS

INTERNATIONAL PAINTS has developed a new coating designed to restore the finish to GRP hulls. One of the problems with earlier paints of this type was the rapid loss of the gloss finish. International has overcome this by the addition of a special solvent system.

The two-part polyurethane paint, called Perfection 709, will, says International, last for up to four years without any loss of gloss and for up to ten years without loss of its protective qualities.

At the same time International has introduced an abrasive cleaner which is used for the preparation of hulls before painting.

● Further information from International Paints Ltd., 24-30 Conute Road, Southampton, England.

## Treeve's low price haulers

BOATBUILDER Treeve Marine of Cornwall, England, has entered the hydraulics field with a system designed for small inshore boats.

Director Rohb Lello explains that existing systems are simply too expensive. "We have never been able to fit a hydraulic system for less than £1,000, while the boat itself may only cost £3,000."

Treeve has sought to fill the gap in the "small" end of the market with two low-price line and pot haulers.

The 600 lb TM System 1 hauler has a four or six inch cast iron capstan head driven by a Danfoss motor on a heavy-duty baseplate incorporating race and roller bearings to eliminate side load.

Its power unit is a Vickers Sperry-Rand vane pump coupled to a Kell friction clutch.

The system includes a seam-welded three gallon reservoir tank and a four-way control valve giving forward, neutral, reverse and pressure relief.

System 2 comprises the same package but with a larger pump and motor.

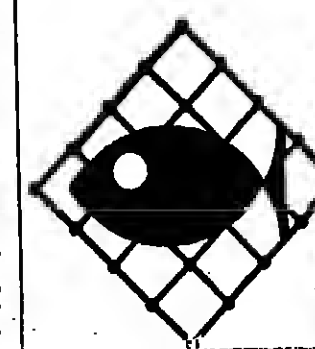
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## product news

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### Signal pistol

A NEW multi-shot signal pistol allows the user to fire up to eight distress flares a minute.

A drum magazine stores flat when not in use, and contains eight self-launching flares which each burn for five seconds — visible, say the makers, for up to two miles in daylight and seven miles at night.

Ease of operation is claimed as a strong design feature. In case of injury or extreme cold, the pistol can be cocked by hand, foot or mouth, and fired one-handed.

The Dial-a-Star can also be used for signalling. Red, green, white and yellow flares can be loaded and fired in any sequence.

The Dial-a-Star is being marketed worldwide by Filnt and Brown Ltd, of Chobham, England.

## Safety first

SURVIVAL radio transmitters employing advanced technology and designed by the Electronics Marine Group of Hull in co-operation with the British Ministry of Defence, Research and Development Establishments, are now available.

The new Locat beacon, despite its small size, sends out a signal in an emergency up to a range of 200 miles which can be picked up on the distress frequencies (121.5 and 243

### ...WITH LOCAT'S RADIO BEACON

MHz) by listening search and rescue services.

Developed over a period of three years, the Locat beacon sells initially at around £100 in the United Kingdom. The new pocket sized unit weighing 330 gms has a shelf life of up to ten years, without any servicing requirement.

It is self-contained in a tough fluorescent plastic cas-

ing. Powered by a 13-volt high energy lithium battery, the Locat beacon incorporates a powerful transmitter. It is buoyant and will withstand being submerged deeper than 50 metres.

#### Temperatures

The Locat beacon will function in temperatures from —20 deg C to +60 deg C with a transmitting endurance of 36 hours at +20 deg C. Operation is simple needing only the removal of a pin by a ring pull to initiate the transmitter.

Further information can be obtained from E.M. Electronics Marine, Wm. Wright Dock, Hull HU3 4PG.



The new Locat survival radio beacon

### STOP THOSE CUTS...



IFM INDUSTRIAL and Food Machinery Company K marketing a new safety glove for use in fish and other food plants. The glove is lightweight, knitted from fine stainless steel wire totally enclosed in a special plastic.

Further information from IFM Industrial Food Machinery Co., Pen Mill Tyndling Estate, Yeovil, Somerset, England.

### Improved lifejacket inflates fast



THE Aque-Safe 60 automatically inflatable lifejacket was shown by Aque-Teknik on its stand at Nor-Fishing in Oslo this month. This approved life jacket features double chambers, improved packing and faster actuating mechanism. It inflates in 8-10 seconds when submerged. Also shown was the new Zodiac "man overboard" boat and the Aque life-saving suit.

## THE LIFE JACKET YOU WEAR AT WORK

A PROTOTYPE "working life jacket", which a crewman can wear aboard the boat was demonstrated last month by the Irish Sea Fisheries Board (BIM).

The development of such a jacket has been exercising the minds of those concerned with safety at sea for years, says BIM. It has now sponsored investigation into the problem, setting himself, BIM's Chairman, Brendan O'Kelly, said that most into protective clothing normally worn by fishermen.

Speaking in Galway, having taken part in the demonstration himself, BIM's Chairman, Brendan O'Kelly, said the most tragedies in the fishing industry occurred when men had been knocked, swept or fallen overboard while working gear. In many cases they were unconscious when they hit the water and not able to help themselves.

Not wearing a life jacket or flotation gear meant that there was not much hope of picking them up no matter how quickly a vessel was turned round and this applied from the small boatmen to those in large trawlers.

#### Avoiding tragedy

The problem, he said, was to find a working life jacket which fishermen would wear at all times.

It was necessary to design the garment with enough buoyancy to support the wearer in the water for a short period and also that minor damage to it did not render the buoyancy ineffective.

BIM does not see the working life jacket as a substitute for the legally required life jacket. It is principally aimed at avoiding the "man-over-board" type tragedy.

The standard life jacket prescribed by law differs little in design since it was first produced in 1852. It is almost foolproof to put on, cheap and hard wearing, but it is impossible to work in. It is required for the "disaster" situation.

#### Japanese interest

The new garment was developed by Tugmaster Safety Ltd. in co-operation with BIM. The Irish have backed the development with their own fishing fleets in mind and are now bringing it to the attention of other EEC countries.

Considerable interest has also been shown by the Japanese Fishermen's Federation, says Tugmaster. A representative came over recently to see the safety clothing.

A demonstration was given last month in Osaka and sample orders have already been placed.

Tugmaster says it is the only company producing safety clothing specifically designed for fishermen in a working environment. The fisherman's flotation smock sells in the UK for around £22 and the flotation bib and brace for £24.

Further information can be obtained from Tugmaster Safety Ltd., Fair Close, Beccles, Suffolk NR34 9QT, England.

## SUPPLIES FOR SMALL BOATS

G & M Power Plant Ltd is setting up a new marine accessories division to sell its smaller products, which will go under the name Marinac.

The new division, as well as taking over marketing of existing G & M marine accessories — such as Mase generators, Constatvolt battery chargers, Aquequest galley water heaters, Vire engines and the Alttwood Crowell and Aquafite Major bilge pumps and water pressure systems — will also be responsible for a number of new products.

New products include: the Marinac Compass Binocular, Recharge generator, Marine Check radar alarm, and Steermaster automatic pilots. The Marinac compass bi-

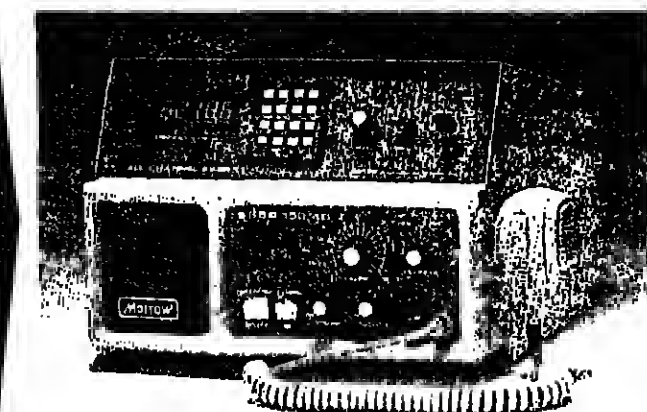


The Marinac compass binocular

ocular combines a pair of precision 7 x 50 binoculars with an internal compass. Accurate bearings can be taken of any objects which appear in the binocular's field.

Further details from G & M Power Plant Company, Marine Division, Magnet Works, Whitehouse Road, Ipswich, Suffolk, England.

### Morrow's new all-channel selector



MORROW ELECTRONICS of Salem, Oregon, has introduced a new all-channel selector accessory for its SSSB-150/40 single sideband transceiver. This ACS-150 device fits "piggy-back" on the set and "revolutionises its frequency selection versatility."

According to Morrow Electronics, a simple computer-type keyboard allows the user to select any marine duplex or simplex frequency from two to 23 MHz instantly with no needs for crystals or factory programming.

Morrow's new all-channel selector with the SSSB-150/40 transceiver and (right) Stephen A. Roth, who has been appointed to develop Morrow products

"The ACS-150's on-board memory will store up to 20 channels for instant recall at any time," says Morrow. "These 20 stored channels are in addition to the 20 permanent channels in the SSSB-150/40, giving the user

a total of 40 channels. The ACS-150's digital display shows channel frequency to the nearest 100 Hz.

Further information from Morrow Electronics, P.O. Box 7078, Salem, Oregon, USA.

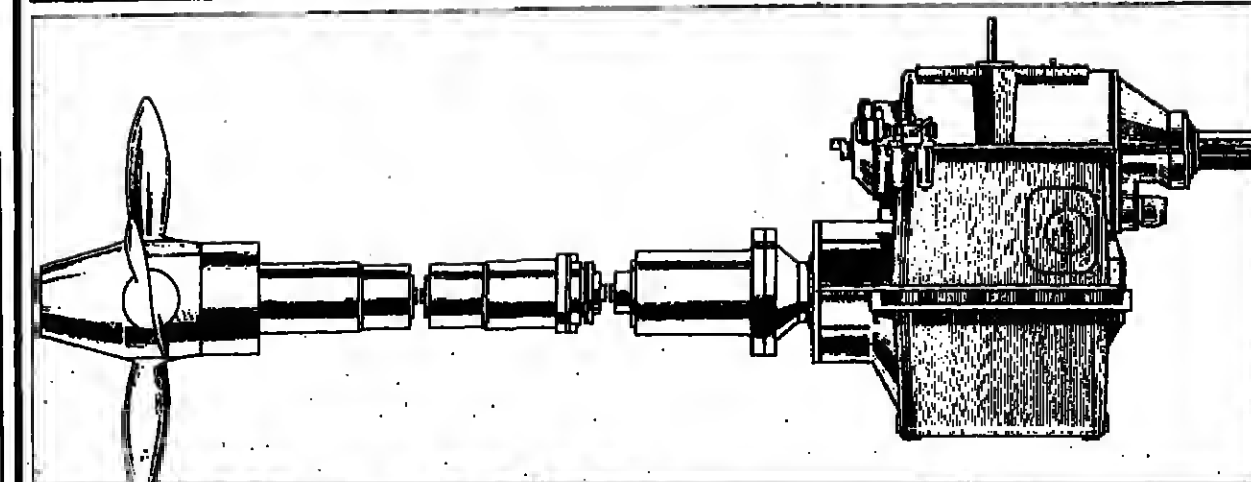
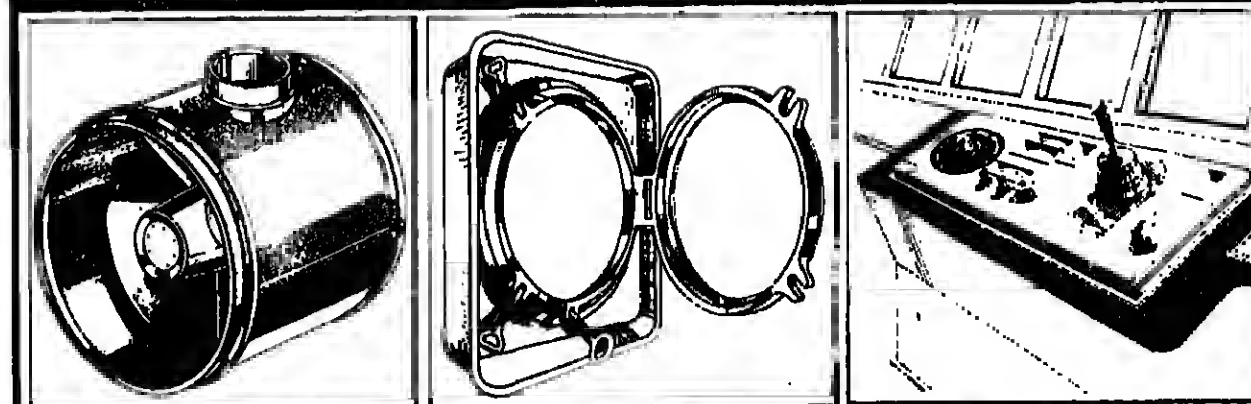
To help develop its range of marine equipment, Morrow has appointed Stephen A.

Roth as its chief engineer and director of engineering.

He is a graduate of Oregon State University with a BSc in electronics. Before coming to Morrow, Roth worked for 13 years as an engineer for Technonix Inc.

With Morrow, he will be responsible for the development of all the firm's marine products.

## DETAILS THAT COUNT



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Delivery of transverse thrusters covers a considerable part of the total sales production covers the area 75-1800 BHP. They are delivered for hydraulic, diesel or electric drive.

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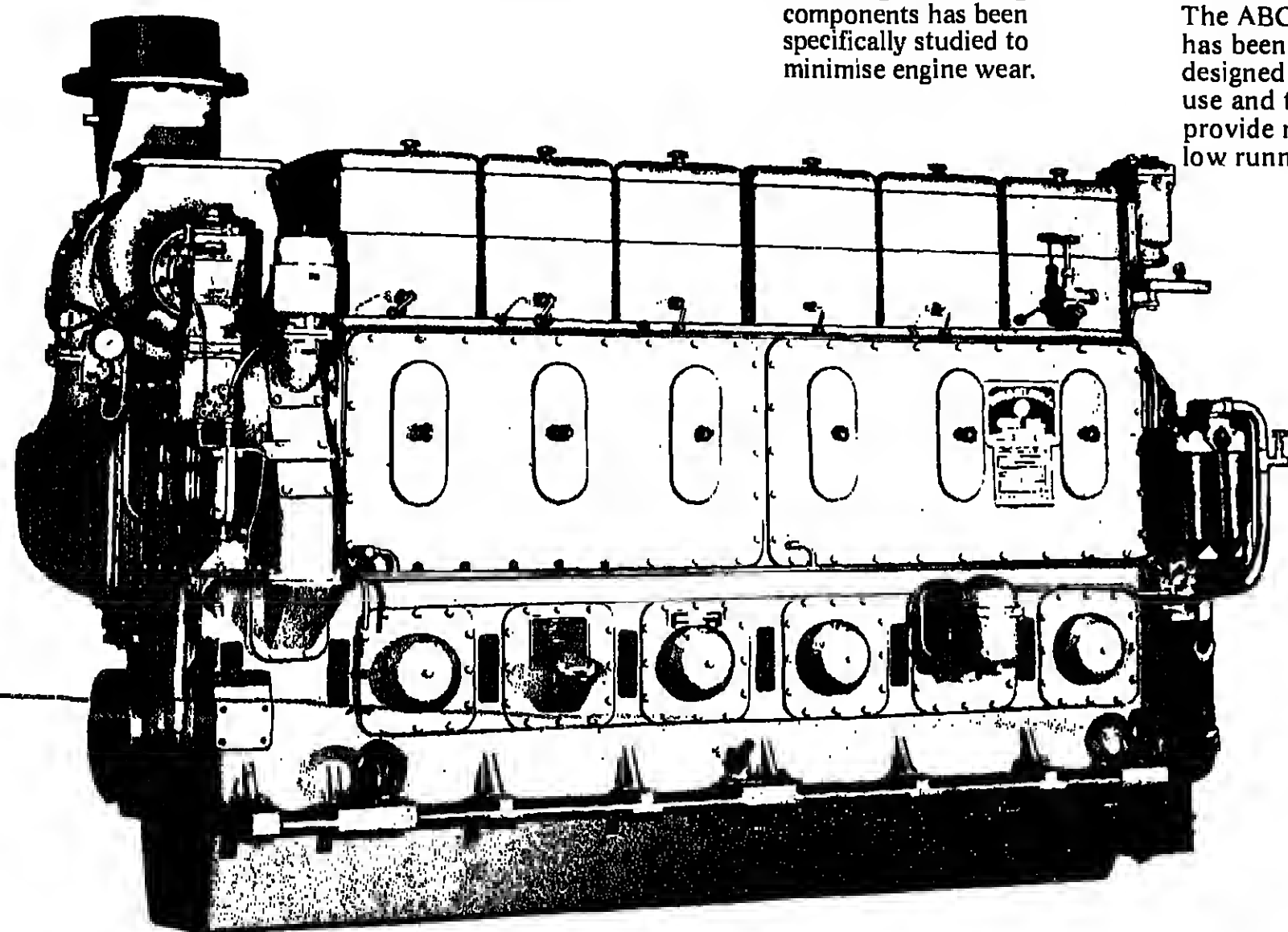
Oslo, Norway. Tel. 190. Telex: 22342

Oslo (N.K.) Limited, Tankerway, Dunderland, Hillend Industrial Estate, Fife KY11 5JT. Tel. 0383 82 31 88. Telex: 727363 ULSTG



# There's more to them than meets the eye.

The 6MDX engine



**Very low engine wear characteristics**  
The design of moving components has been specifically studied to minimise engine wear.

**Medium speed**  
Maximum power is obtained at 750 rpm. The ABC MDX engine has been specifically designed for marine use and therefore will provide reliability and low running costs.

**Very low lube oil consumption**  
We claim to be the lowest of any engine within our range.

**Good fuel consumption**  
Average 162 grammes per horsepower/hour with all accessories fitted.

**Very low noise levels**  
The material mass correctly positioned absorbs a considerable amount of noise.

**A dry sump**  
Ensures correct lubrication of all working parts which results in a longer interval between services and less engine wear.

## ABC marine propulsion engines.

Some things about ABC engines you can see at a glance.

The superb design, for instance, for easy maintenance and servicing. And the precision engineering, which makes for ABC's unrivalled reliability.

But there's a lot more to them than meets the

Find out more about ABC engines. There's a lot more to them than meets the eye.

Quite simply the best value for money you can buy.

The ABC engine range consists of DX 600—750 RPM. 185—1200 HP.

### TRAINING TOPICS

## Students from eight countries on WFA course

### SAFETY FILM WINS AWARD

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The main areas of study are: naval architecture (one week), fish preservation and handling (one week), fishing gear technology (two weeks), fisheries management (four weeks), fish farming (one week), vessel engineering, electricity, engines and hydraulics (one week), acoustic fish detection (one week) and marine science (one week).

The WFA's next course in fisheries technology and management starts in Hull on April 2, 1979. The fee is £950 excluding travel and accommodation. Accommodation can usually be arranged on behalf of students providing at least one month's notice is given.

### COMPLETE THIS FORM TO ENROL

**WFA**

To: The Training Manager,  
White Fish Authority,  
Industrial Development Unit,  
St. Andrew's Dock,  
Hull HU3 7SV,  
England.  
Telephone: 0482-27837.  
Telex: 527261.

- ☐ I would like to enrol for the next course in Fisheries Technology and Management, which begins on April 2nd, 1979.
- ☐ Please send me more details about the Fisheries



SMALL-SCALE fishing in Chile — the Japanese are to help its development

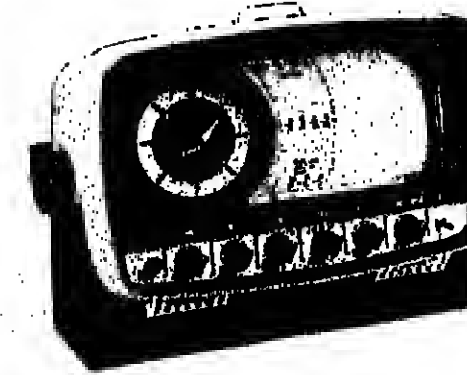
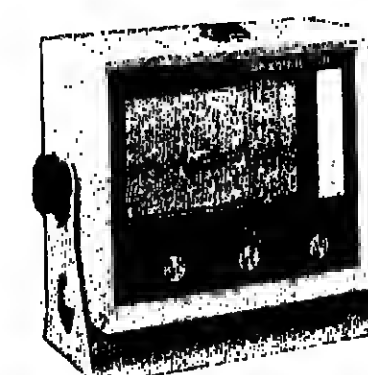
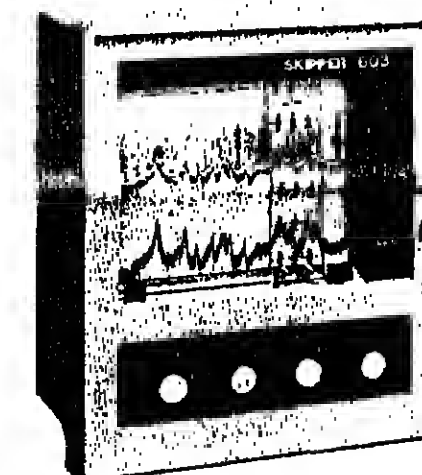
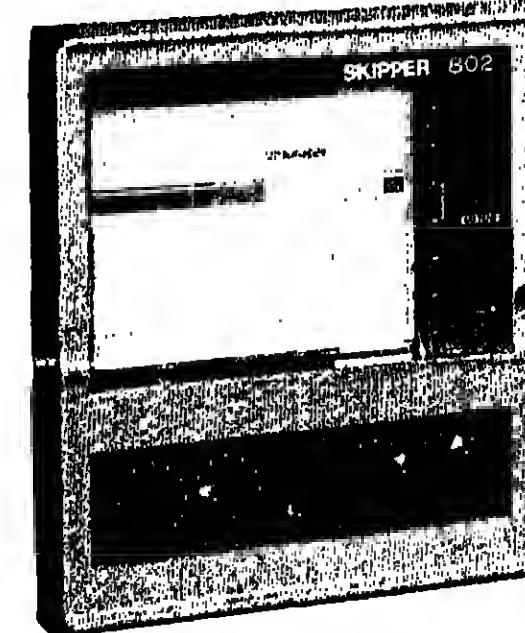
## JAPANESE TEACH-IN

THE Japanese government is co-operating with Chile in a pilot project aimed at developing artisanal fishing in the South American country.

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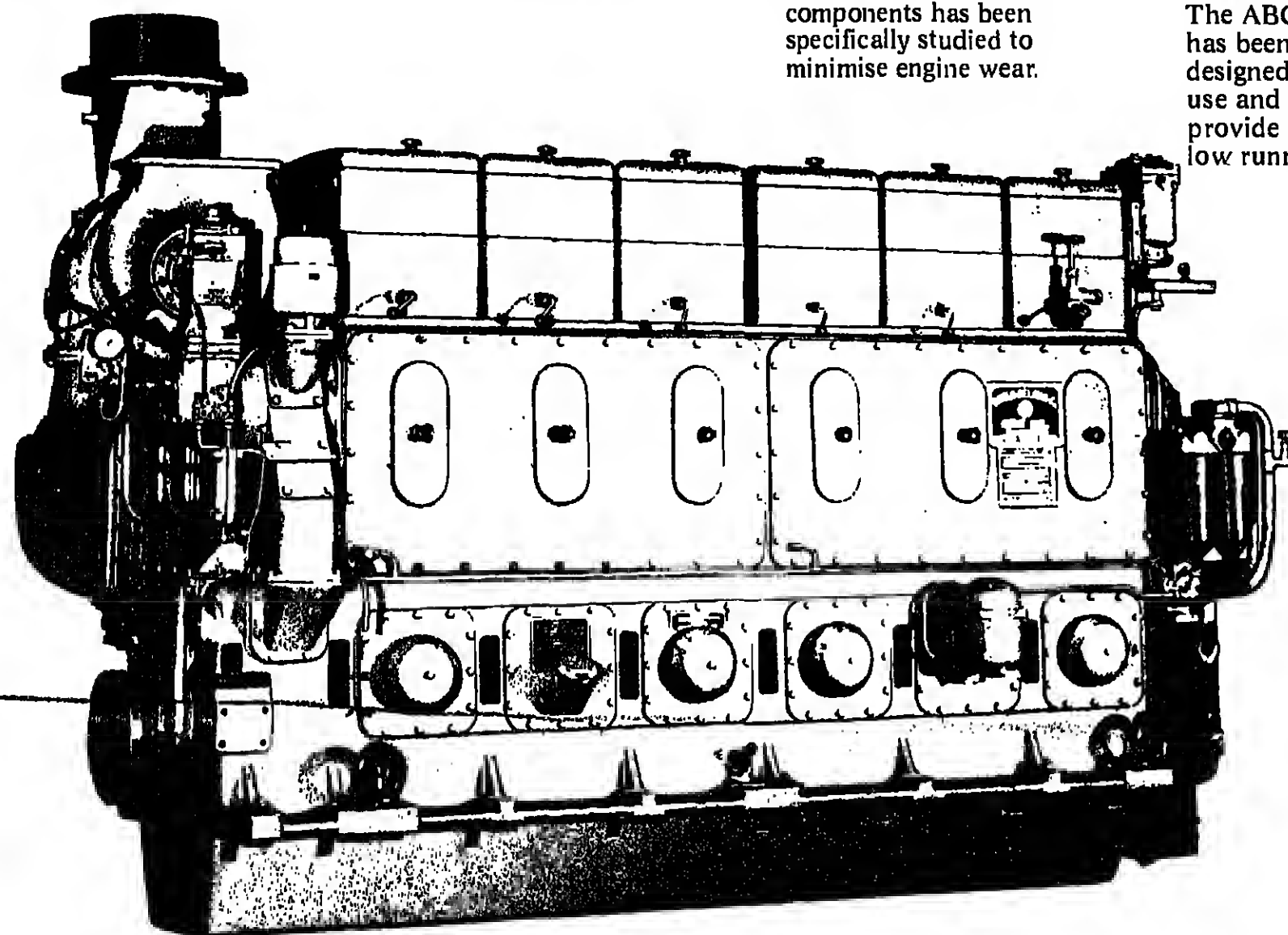
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Find out more about ABC engines. There's a lot more to them than meets the eye.

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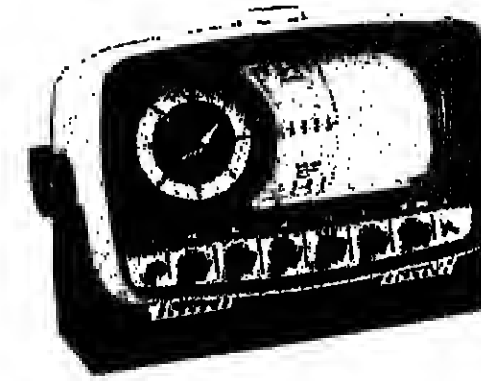
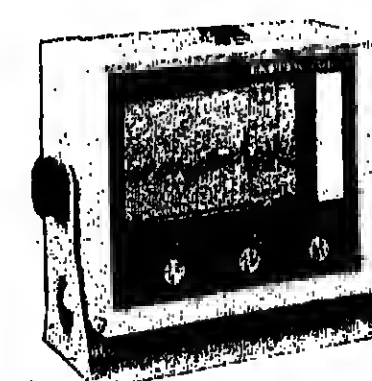
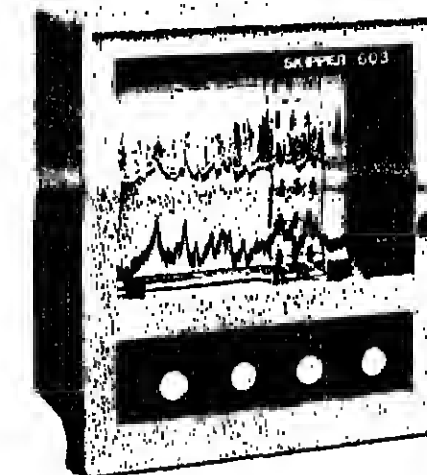
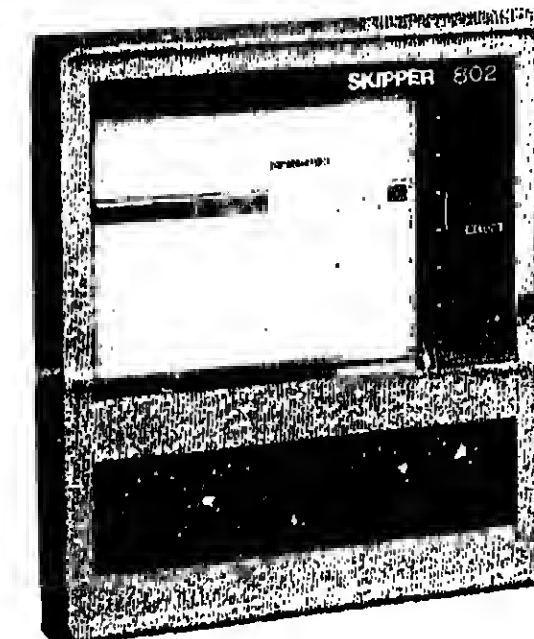
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SMALL-SCALE fishing in Chile — the Japanese are to help its development

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**SKIPPER**



# The new complete guide to the

## U.S. fishing industry...

THE FISHING publishing event of the year in the United States was the launching, at Fish Expo in Boston in October, of the new 560-page *American Fisheries Directory* and Reference Book.

An associate publication of the journal *National Fisherman*, the book was compiled and prepared in three years of intensive work by its editor Burton T. Coffey, an advisory board and a production team. It must rank among the largest and most comprehensive references ever devoted to one fishing country.

It also appears at exactly the right time. The huge 1978 Fish Expo, with well over 300 exhibitors, demonstrated that the US fishing industry is not only large and fast-

growing; it also offers a vast and discerning market for makers all over the world of equipment for finding, catching and processing fish. The problem with this market is its sheer complexity. Although there is central direction to some aspect of US fisheries, most of the control and the administration is still vested in various administrations in 50 states.

### Many requests

Complications in finding where to sell, who to approach and who runs what brought a continuing flood of requests for information to the *National Fisherman*, largest of the journals serving the industry.

There are enquiries for sources of equipment, boatbuilders, naval architects, research reports, specialised services, financing, statistics and locations of government offices.

It has long been a problem for *National Fisherman*, but also, says

Burt Coffey, an inspiration for the new Directory.

He explains in his Preface that, until now, US commercial fisheries did not have a central reference.

The *National Fisherman* saw the need but, from their experience, its staff felt that the Directory should be more than just the most extensive listing of equipment makers and dealers available.

"It should also be a complete reference book for sources of information in all aspects of the industry nationwide," adds Coffey.

He has accomplished just this. The Table of Contents alone occupies several pages. It may be too much to say that any basic information you need about the US fishing industry is in the book, but it is hard to find what, if anything, has been left out.

For those not yet well acquainted with American commercial fishing, a valuable introduction is in the extensive opening section. Here, state by state, are listed all the adminis-

trative services, the colleges, the fishermen's organisations, and recent catch figures.

Section Two deals with organisations of fish farmers, boatbuilders, fishermen, processors, researchers and many others.

### Federal government

Section Three is a brief international directory. Section Four is a much larger national directory. This details US federal government bodies involved with the industry, setting out their functions.

It outlines fishery legislation, listing and summarising the various Acts. The Fishery Conservation and Management Act of 1976, which created the US 200-mile zone, is published in full.

Section Five, the largest, lists equipment and services and is divided into 15 chapters. Included are manufacturers by company and by product category; distributors and dealers by company and product category; cold storage facilities; marine surveyors; and naval architects.

Of particular interest in this section, in view of the big development in vessel construction, is a very extensive list of ship and houtholders.

For anyone looking to the United States as a market for equipment or as a source of fish, this Directory is an essential introduction. For those already involved, it must become a constant reference.

● The Directory is available from 21 Elm Street, Camden, Maine 04843, USA. The price is \$40 soft cover or \$52 hard cover, plus postage.

\* Published by A. A. Balkema, P.O. Box 1675, Rotterdam, Netherlands.

## More advice from Torry...

THE Torry Research Station in Aberdeen, Scotland, has issued two more of its useful Advisory Notes. Latest in the series is Note 77 on squid and Note 78 on health hazards in handling industrial fish.

Squid is one of the under-used species now being suggested as a possibility in the British fish catch. The note gives information on its distribution in UK waters, on handling and processing, storage, and the yield of edible flesh.

Note 78 outlines the dangers of handling meal plant fish at sea, and in port caused by poisonous gases released from catches.

## THE BOOKS

### SHELLFISH FARMING IN JAPAN



Reft culture of eblone in Japan. Looking inward to equeculture.

AS SPREADING limits have curtailed fish hunting opportunities in waters all over the world, Japan is having to turn inward — to her still-rich coastal waters and to the expertise she has accumulated over the years in the culture of fish.

China may be the largest producer of farmed fish, but most of this is in the form of carp and other freshwater species grown in the thousands of inland farm communities.

It is to Japan, with her varied forms of aquatic culture and techniques that can be applied world-wide, that most aquaculturists look to guidance and inspiration.

Unfortunately, there is still a dearth of literature on Japanese fish farming technology. Translations are difficult and expensive.

### Welcome

For farmers, therefore, a particularly welcome event is the translation of a classic work, edited by Professor Taken Inot and now published in English as *Aquaculture in Shallow Seas*.

This is a large book of more than 600 pages and is illustrated by photographs, drawings and graphs. For those wanting to read further, each of its sections ends with an extensive bibliography.

Five sections cover what are still probably the main areas of Japanese aquaculture. The first deals with the evolution of seaweed culture. It is followed by sections covering oysters, scallops, abalone and prawns and it sets the pattern for them.

### Techniques

First, biological research work is described and this is followed by a description of the techniques employed.

In a sixth section titled artificial culture of shellfish, the book deals with the culture of micro-organisms used as feed, the rearing of larvae and seedlings of bivalves and artificial seeding of abalone.

At a time when the prices of books on aquaculture seem to be rising ever higher, this very substantial work is a bargain at £11.20 or \$21.30.

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## PAGE

THESE DAYS, the modern deepsea trawler is almost always equipped to take her fish in mid-water as well as off the bottom. It was perhaps inevitable therefore that John Garner should follow his book *Modern Deep Sea Trawling Gear* with a companion volume on *Pelagic and Semi-pelagic Trawling Gear*.

In the second edition of *Deep Sea Trawling Gear*, published in 1977, he explains that it "has been found necessary to add to the contents of this work, covering briefly mid-water trawls."

He now develops the subject, tracing first the evolution of pelagic trawls in association with better and better electronic methods of finding the fish and mechanical methods of handling the gear.

### New concepts

He examines existing net patterns and new concepts, considering the different designs that have evolved and looking at their advantages and disadvantages. This chapter, like all others in this small book, gains immensely from the many drawings by the author.

In chapter three, he deals with specifications of single vessel pelagic trawl nets and different towing assemblies. He follows this with a chapter on other boards and assembly procedures for pelagic gear and another on rigging procedures.

After describing semi-pelagic and single vessel dual purpose trawls, he closes with chapters on pelagic pair trawls and their application, and on mesh size and its selection.

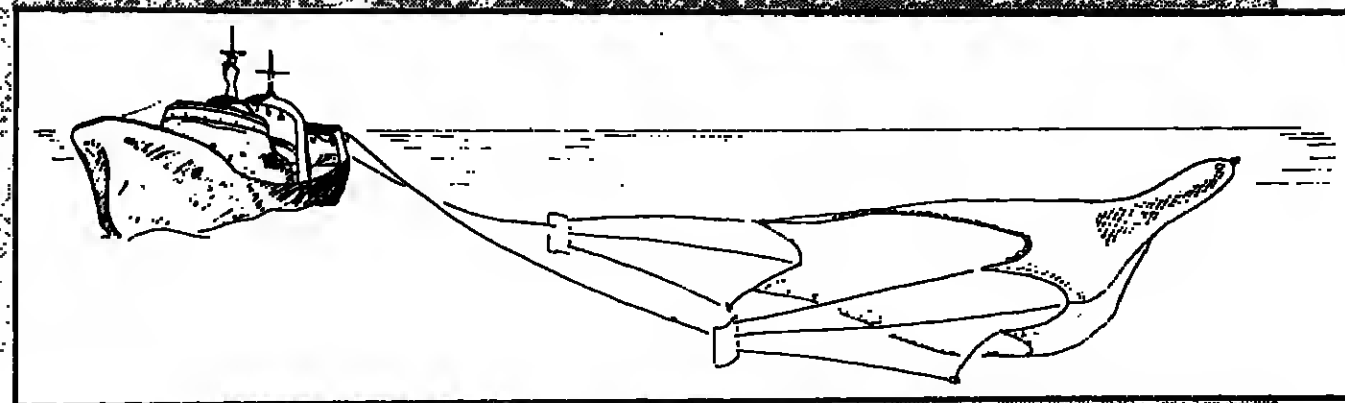
Over-fishing is one danger that arises from the ever-increasing efficiency of fish finding and catching. John Garner admits this in his preface.

### Quick rewards

One solution, he notes, is short-term and quickly rewarding and lies in the closure of known breeding grounds. Other methods are the introduction of international quota systems and multilateral agreed limiting rates.

Faced with these developments, he foresees the growth of "united" operation. "By that term," he explains, "I wish to indicate the establishment of a working-catchment unit which has achieved a high degree of proficiency and is thus accepted." An example might be the Gulf of Mexico style of

## From deep sea to



## mid water

One of the many drawings by John Garner in his new book on pelagic trawls. This is a dimensional sketch of a stern trawler towing her pelagic gear in mid-water.

## Quick briefing...

● IN 1976, at the request of a fisherman in Chatham, Massachusetts, University of Rhode Island commercial fisheries specialist R. E. Taber tested the feasibility of Scottish seining in southern New England boats.

The fisherman's 39 ft boat, the *Deshr*, was converted from a line trawler to a seine netter and was used in trials during the spring of 1977.

In a 19-page report (Publication No. 725), Taber discusses the boat's rigging,

equipment, gear and results of the trials.

The report can be obtained from University of Rhode Island, Marine Advisory Service, Publications Unit, Narragansett Bay Campus, Narragansett, Rhode Island 02882, USA.

● THE International Foodservice Manufacturers Association (IFMA) of Chicago has published a comprehensive reference work analysing food service and

catering markets. Titled *IFMA Encyclopedia of World Foodservice Markets*, the work covers 171 countries.

Statistics for each country range from population, population growth rate, GNP, production and consumption to all specific catering industry data available.

The Encyclopedia is available from IFMA, 875 N. Michigan Avenue, Chicago, Illinois 60611, USA. Price US\$80.

## POLLUTION

TO THE environmentalist and fisherman, pollution is an emotive word. Judgments are apt to be made without the embarrassment of facts.

It is good, therefore, to see that FAO and the National Marine Fisheries Service of America have attempted to introduce some quantification into this lively arena — though with what degree of accuracy we cannot know.

The American Atlantic coast and the Gulf of Mexico offer an excellent field for study, being well provided with monitoring facilities, fisheries and pollutants. These are mainly: town and industrial waste, oil and gas exploitation, waste heat disposal, shipping and commerce, dredging and combustion and processing.

### Insidious

How these affect the fisheries depends greatly on other factors such as proximity to fishing grounds, value of landings, direction of currents and whether the effect is temporary or not.

One of the most insidious is the effect of town and industrial sewage which can create havoc by reducing the oxygen content of water, to a level at which mortalities are

## and the cost to fishing

widespread in the food chain. Heat pollution can cause dangerous "blooms," bad for shellfish, which are equally at risk from coliform pollution, heavy metals and sewage with industrial run-off.

Among the harmful effects of oil drilling (there are 12,000 wells off Louisiana) is the "formation water," a brine/oil mixture which constantly finds its way into the sea in quantities far above those caused by spillage.

The sheer weight of shore and sea activity surrounding the oil industry is also a major cause of damage to the environment, and this includes the loss of wetlands as spawning and breeding areas when the civil engineers move in.

Now there are plans to drill on Georges Bank, off New England. Although the calculated drop in catch levels and loss of trawling space appear trivial, the effect of brine/oil

on spawning and the general disturbance could be serious. On the brighter side, rigs and platforms are providing new habitats and food sources for fish, which live on the attached molluscs, etc.

Sport fishing catches, so important in the USA, have risen as a result; some of the dollars earned from leasing of oil sites are ploughed back into environmental work such as artificial reefs.

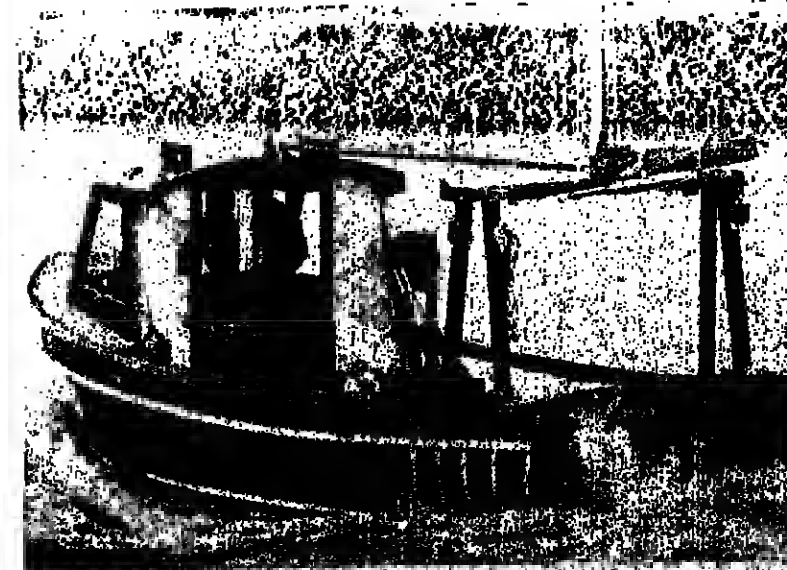
### Difficult

While it is difficult to quantify the economic impact of pollution, this FAO publication helps us to assess its nature and its effect on fisheries, which is useful enough. The cost cannot be counted for years in some cases, as with the recent Amoco Cadiz oil spill off Brittany. And if it could, would it be sufficient deterrent in the almost desperate quest for oil?

FAO Fisheries Technical Paper No. 172 *Economic Impact of the Effects of Pollution on the Coastal Fisheries of the Atlantic and Gulf of Mexico Regions of the United States of America*. From FAO agents or from Publications Division, Viale delle Terme di Caracalla, 00100, Rome, Italy.

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# Book News Book News

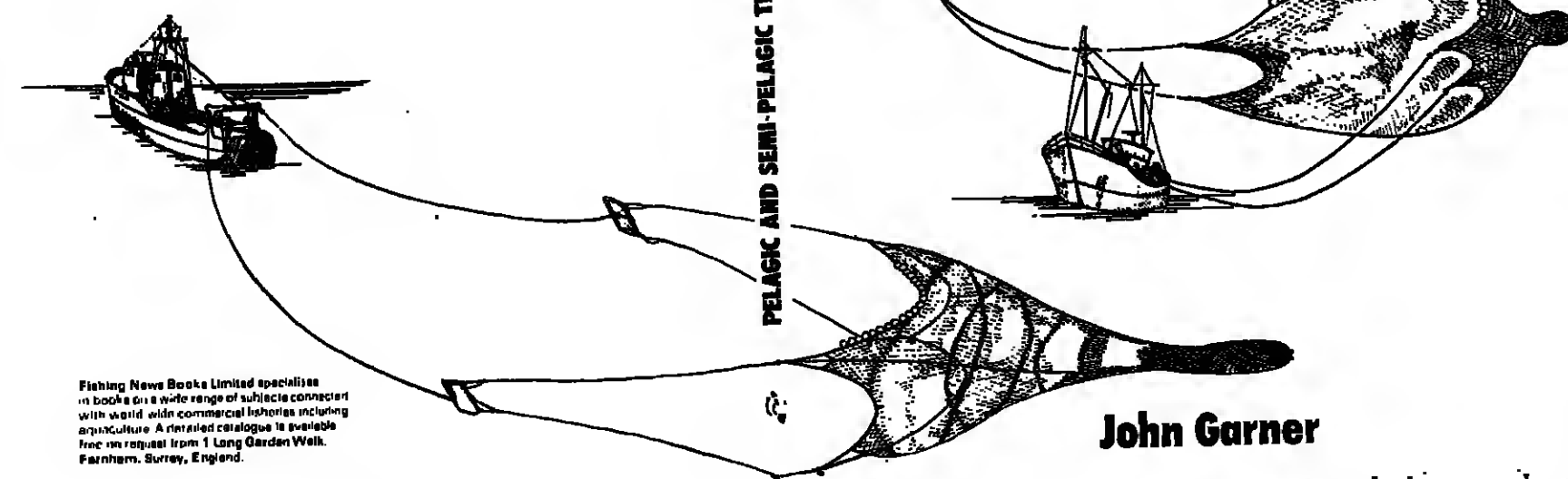
Fishing News Books Limited specialises in publishing practical books on commercial fishing, fish farming and allied themes.

The increasing demand of world population for protein food such as that derived from the sea has led to improved technology for specialised fish catching methods. These methods have led to heavy and often over fishing with the threat of depletion of some species. Inevitably the most viable conservation measures are those which encourage the more efficient design and handling of gear suited to the capture of pelagic and semi-pelagic fish. Many of the successful developments in current use have contributed to the commercially sound specifications already in use and outlined in this book.

stock, specific gear should be more generally adopted. By careful concentration on shoals of mature fish (eg. herring) individual catches of immature fish could be avoided and damage by mesh hauls reduced. Appreciation of this need led to the production of this book which is intended to encourage the more efficient design and handling of gear suited to the capture of pelagic and semi-pelagic fish. Many of the successful developments in current use have contributed to the commercially sound specifications already in use and outlined in this book.

## PELAGIC AND SEMI-PELAGIC TRAWLING GEAR

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## THE BOOK PAGE

FOR FISHERIES ECONOMICS...

# THE COMING-OF-AGE

FISHERIES economics as a distinct area of economic science is conventionally, and quite rightly, regarded as dating from H. Scott Gordon's paper "The economic theory of a common-property resource: the fishery" published in the *Journal of political economy* in 1954.

Colin W. Clark's recent book goes a long way towards providing the integrated theoretical treatment which has been lacking up to the present.

The early chapters introduce the classical

Schaeffer-Gordon model in a way, however, which differs from Gordon's pioneering approach, firstly, in that it is not based on production theory, and secondly, and more importantly, in that it takes account of the interest rate.

### Unusual

Another surprising conclusion of Clark's is that excess capacity, a common characteristic of the world's fishing fleets, is not simply the result of common property exploitation of the resource, but that it can occur under optimal management.

Supply and demand relationships are examined. The supply curve for the industry, i.e. the relationship between the price of fish and the quantity supplied, is unusual — it shows that initially increases in price are associated with increases in quantity, but subsequently further price increases are linked with reductions in quantity.

And because of the sharpness of these reductions there may be more than one point at which demand and supply are equal. The absence of a unique equilibrium accounts for the demand instability and associated price fluctuations

which typify the industry. Some areas which could have been discussed more fully include the effects of partial controls and the effect of the fishing industry on the distribution of incomes.

### Impressive

However, the book is an impressive statement of the present position of fisheries economic theory, yet it cannot be unreservedly recommended to people in the industry.

For a start, it is a mathematics book, one of a series of mathematics monographs. Further the book does not relate only to the fishing

industry. Finally, it is expensive: £16.35 for 352 pages.

There clearly remains a need for the theory discussed in this book to be interpreted in a more verbal and less mathematical way for the concepts to be accessible to students of the fishing industry. But in that it provides

a basic theoretical framework on which future work can be based it is a very important book.

\*Callin W. Clark, *Mathematical Bio-economics: The Optimal Management of Renewable Resources* John Wiley & Sons Ltd. ALAN MARRIOTT



## Anatomy of a co-op

IT IS GENERALLY accepted that communities of small-scale fishermen are more likely to progress economically and technically when organised into a group such as a co-operative. From the administrators' point of view, a co-op parcels up a number of rugged individualists into a manageable group, capable of joint responsibility in matters such as the administration of loan funds.

But it does not follow that fishermen will readily adopt what the expert believes will be good for them, as aid organisations have discovered, often to their embarrassment. It helps to understand the fisherman's attitude to, and concept of, a co-operative before persuading him to form one.

In Panamanian Small-scale Fishermen: Society, Culture and Change\*, the Department of Sociology and Anthropology of the University of Rhode Island has collected a number of studies by its staff, designed to explore such attitudes.

It used for its research the small-scale fisheries of Panama, comprising 1,200 full and part time fishermen operating gillnets and lines.

By studying a sample of 153 fishermen, scattered over seven areas, the Department was able to compare the attitudes of co-operative members with those of non-members and that of relatively sophisticated groups with others from more remote areas.

### Older groups

Fishermen who had belonged to or been associated with co-operatives were seen to be more "pro" co-ops and this became more marked in older age groups, suggesting that experience reinforced this view. Many saw the co-op as a "buffer" between them and the administrative/financial hassle of the outside world; others saw it as a more efficient way of marketing their fish.

Those with no direct experience of co-operative fishing visualised the main

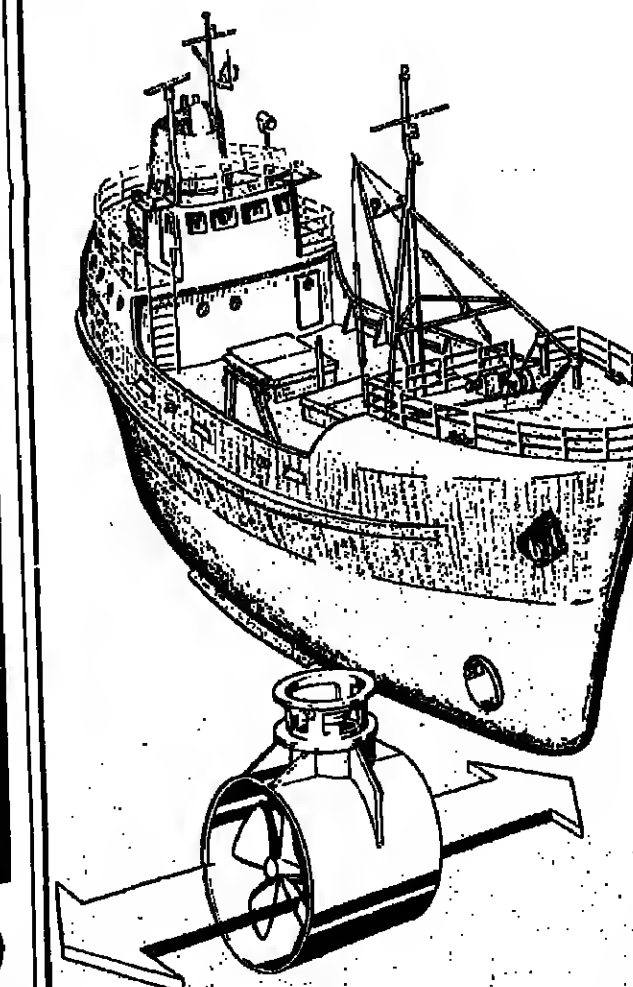
benefit as the provision of gear and equipment, a function which, in actual experience, was relegated to third place.

In all cases, the abstract concept of co-operation was seen as being less important than the more tangible benefits of loans and better marketing.

Authors Richard B. Pollnac and Roberto Ruiz-Stout have produced a useful addition to the already formidable amount of literature bearing on this subject — the references occupy over three pages — though it should be understood that this particular research project was part of an overall development programme for the area and not carried out as pure research.

\*Panamanian Small-Scale Fishermen: Society, Culture and Change. Edited by Richard B. Pollnac, Department of Sociology and Anthropology (Marine Technical Report No. 44), International Center for Marine Resource Development, University of Rhode Island, Kingston, Rhode Island 02881, USA. Price \$1.

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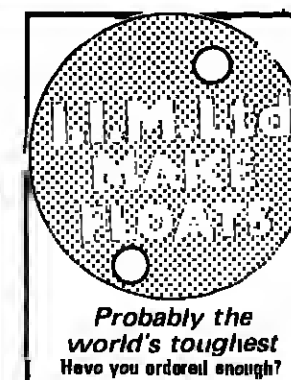
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# Pursers bring hope for better times in south India

THE INTRODUCTION of purse-seining has given a big boost to fishing along the coast of the southern Indian state of Karnataka, reports *FNI* correspondent Trevor Driberg.

Waters off Karnataka abound in mackerel and sardinella. It is estimated that the state could export 60 tons of mackerel daily to the Persian Gulf countries and enquiries are already coming in.

The 300 km stretch of coast from Ullal to Marwar has been described as "an inexhaustible fish mine." Catches there vary widely between 40,000 and 120,000 tons a year, depending on whether the shoals approach the coast.

Until 1977, despite mechanisation of boats over the past two decades, the large traditional rimpuni nets used accounted for 75 per cent of the mackerel and sardinella. Some 1,500 small mechanised boats working in the area concentrated mainly on trawling for shrimp.

## Doubled

Now purse-seining is bringing promise of better times for local fishermen. The number of purse seiners has doubled this year to 100 and another 80 boats are building in yards along the coast.

The method was only recently introduced to Karnataka from Goa but local fishermen quickly learnt the technique which enables them to take in 600 to 800 tons a day.

In 1977 some 50 purse seiners netted a total of 30,000 tons of a 126,000-ton catch; another 30,000 tons was taken by the small mechanised boats and the rest by the rimpuni nets.

## Problems

Karnataka's Director of Fisheries, Mr. Jayaraj, expects the catch this year to rise to 140,000 tons. But the better fishing has also brought problems.

The 60 ice plants along the coast cannot cope with demand, and another 100 tons of capacity is needed urgently.

The state Fisheries Development Corporation has only 50 tons of freezing capacity a day and 800 tons of cold storage space. Both need expanding.

Possibilities of mid-winter trawling are also arousing interest in Karnataka. Two groups of fishermen are reported to have started fishing with the new gear. Working from 10-metre long powered boats, they have been taking daily catches of 2.5 to 3.5 tons.

## Satellite watch suggested

NORWAY should consider satellite surveillance of the eastern Barents Sea to assess fishing intensity in areas where she has no control.

Suggesting this, Leiv Cronnevel, secretary of the Federation of Fishing Boat Owners, said satellite pictures would provide information on the number of boats in a given area at any time.

This could then be used in conjunction with statistical material and research data to present a total impression of catches. The last step in the process would be to compare results with quotas and reported catches.

## SIX MORE BOATS

WILMAR Fishing Company, a deep-sea fishing firm based in Quezon City in the Philippines, is acquiring more vessels for its fleet with the help of a long-term loan of 3.4 million pesos (about £260,000).

The expansion, funded by the Philippine Private Development Corporation, will enable the company to supply fish to industries turning out small and dried products, fish paste and fish sauce.

## FURUNO

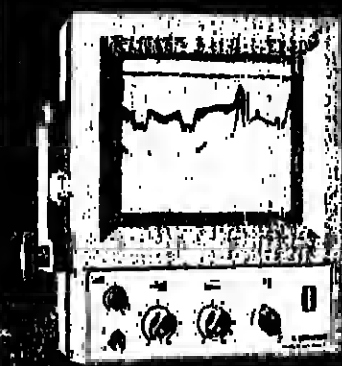
### Fabricators of Versatile Marine Electronics Equipment



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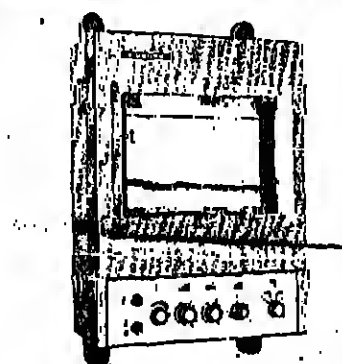
**ECHO SOUNDER FE-501/502**

Impervious, high performance. Advanced amplifier design. 6" dry paper.



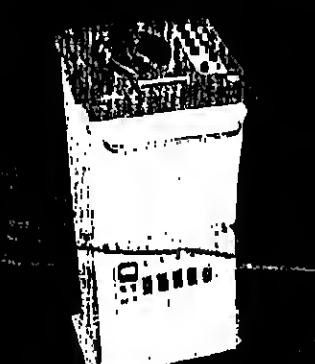
**SONAR FH-105**

360° search with a sharp beam. Stabilized against ship's pitch and roll. 7" CRT. Beam tilt 0-90.



**ECHO SOUNDER FE-D612**

High reliability. Wide dynamic range for easy ground discrimination. Built-in 2KW solid-state transmitter.



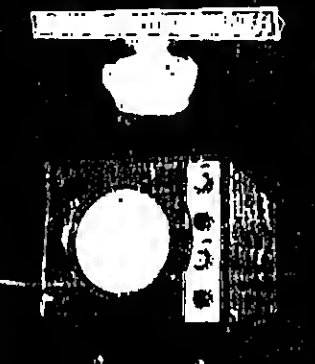
**SCANNING SONAR FSS-32B**

Full-circle, multi-beam electronic scanning sonar. Panoramic 360° search. 10" bright picture. Four ranges: 200, 400, 800 and 1600m (off-center to 2800m).



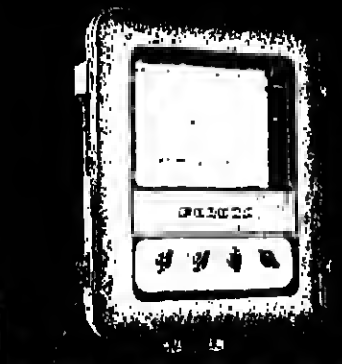
**OMEGA RECEIVER FORM-3AR**

Tracks all stations received. Unique lane interlock system for flexible selection of Omega Stations. Can be connected to Satellite Navigator FSN-20B.



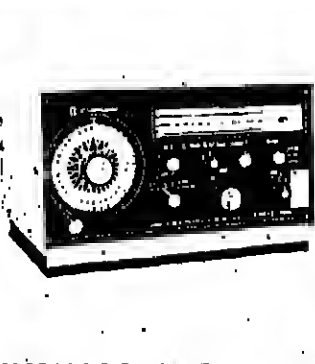
**MARINE RADAR FR-160**

The most compact radar ever sold in the world with commercial radar performance. 7" CRT. 1/2 to 16 miles (off-center to 20 miles).



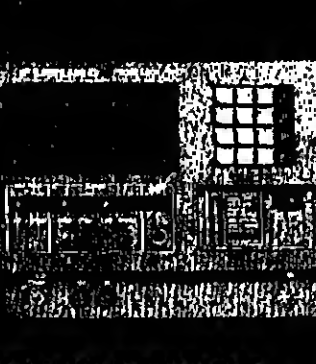
**ECHO SOUNDER F-850 MK-II**

High discrimination on 8" dry paper, white line and STC.



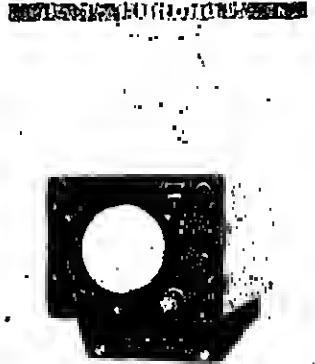
**AUTOMATIC DIRECTION FINDER ADF-5 MK-II**

Automatic, instant determination of bearing of radio transmitters. No 180 degree ambiguity.



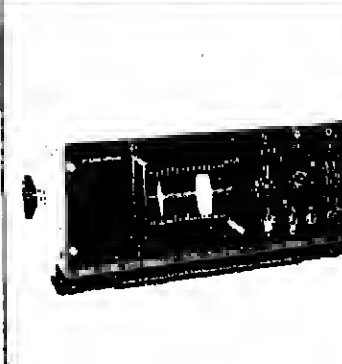
**SATELLITE NAVIGATOR FSN-20B**

High accuracy positioning system using advanced microprocessor techniques. Worldwide coverage. Automatic dead reckoning between satellite fixes.



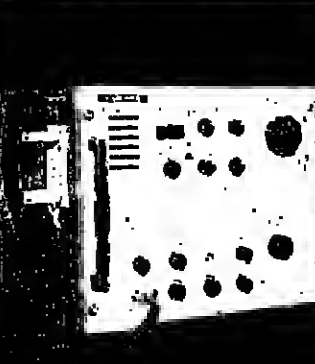
**MARINE RADAR FRS-43**

High sensitivity, solid-state, IC amplifier. 7" CRT, 10KW output 1/2 to 48 miles.



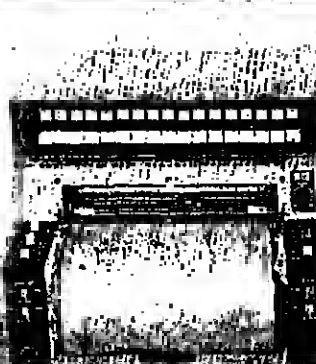
**MEMO-SCOPE ES-5/N**

Detects any depth segment with expanded ranges of 7.5, 15, 30, 60 or 120m. Bottom locked or surface locked. Memory circuits provide non-flickering, steady picture.



**SSB RADIOTELEPHONE NS-15**

19W output. 40 receive, 36 transmit channels in 16-22MHz. All plug-in on coil boards for easy maintenance. Built to CIP specifications.



**FACSIMILE RECEIVER FAX-103**

Single style with memory circuits; no worry about stylus adjustment. Automatic, unattended operation corresponding to WMO stop/start signals.



**MARINE RADAR FRM-64/W**

25KW high power transmitter with high pulse length operation. High sensitivity logarithmic amplifier. 124 to 64 miles.